601
48

JOURNAL of the AMERICAN VETERINARY MEDICAL ASSOCIATION

UNIVERSITY OF CALIFORNIA
DEC 9 - 1941
LIBRARY

INDEX NUMBER

VOLUME XCIX, NUMBER 777 DECEMBER 1941

TABLE OF CONTENTS, PAGE II

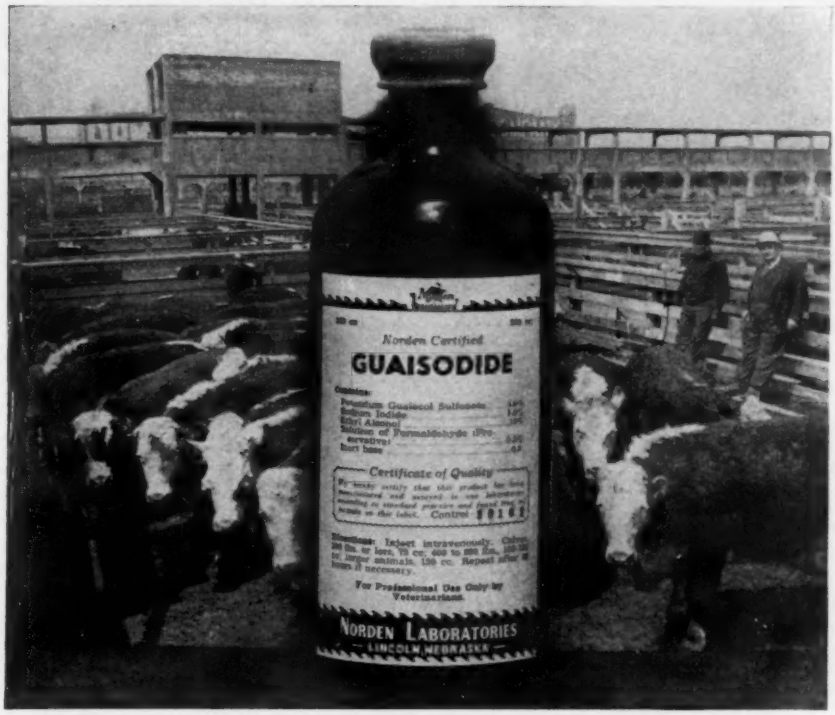
SYMBOLIZING "CORN STATES"

The approach of a new calendar year turns attention to the debt owed to the veterinary medical associations and their tireless officers and members for advancing veterinary science and its usefulness among the food-producing animals of this country.

Gearing up for maximum production to meet the needs of a troubled world, animal industry is looking to the members of these associations to police its undertaking against the subversive exploitations which nullify its efforts—against incompetent products, methods and men.

The Corn States Serum Co.
Omaha, Nebraska

Shipping Fever – A Real Problem



Norden Certified

NEW

GUAISODIDE

According to the exact formula of Drs. H. W. Johnson and James Farquharson. See articles on "Therapy of Shipping Fever in Cattle"—p. 103, August issue, Journal of the American Veterinary Medical Ass'n; and Sept.-Oct., 1941, issue of Norden News.

Use Intravenously

Contains: Potassium Guaiacol Sulfonate, Sodium Iodide, Ethyl Alcohol.

Dosage: Calves, 300 lbs. or less, 75 cc; 400-600 lbs., 100-125 cc; Larger animals, 150 cc. Repeat after 48 hours, if necessary.

Per case of six 250 cc Bottles.....*$4.70*

Stocked by All Norden Branches and Distributors
Mail Orders Promptly Filled

NORDEN LABORATORIES
LINCOLN *"The Mark of Quality"* **NEBRASKA**

Journal of the American Veterinary Medical Association

CONTENTS

General Articles

Veterinary Service in the Defense Effort—Colonel R. A. Kelser 455
Which Way Brucellosis Control?—C. U. Duckworth 462
Requisites for a Practical Intracutaneous Test for the Detection of Trichina Infection in Swine—Benjamin Schwartz 465
Lancefield Group E Streptococci in Cervical Abscesses of Swine—H. J. Stafseth and Ivory Clinton 468
The Incidence of Glomerulonephritis in Domesticated Animals—R. F. Langham and E. T. Hallman 471
Studies on the Relationship of Brucellosis to Periodic Ophthalmia—E. L. Stubbs and W. G. Love 476
Immunization Against Cecal Coccidiosis in Chickens by the Use of X-Ray-Attenuated Oöcysts—S. H. Waxler 481

Surgery and Obstetrics (and Problems of Breeding)

Laryngeal Paralysis in a Dog and Its Surgical Treatment—Theodore Allen 486
Glass Eye in a Polo Pony 487
The Use of Sulfanilamide in Minor and Major Surgery 487
A Practical and Efficient Building for Horse Breeding—William E. Jennings 488
Raspberry Tea 491

(*Continued on page iv*)

Officers: H. W. Jakeman, *President;* W. W. Dimock, *President-Elect;* J. G. Hardenbergh, *Executive Secretary;* M. Jacob, *Treasurer.*

Executive Board: O. V. Brumley, *Chairman;* C. W. Bower, *Member-at-Large;* A. E. Cameron, *1st District;* R. A. Hendershott, *2nd District;* J. L. Axby, *3rd District;* W. E. Cotton, *4th District;* F. M. Wilson, *5th District;* W. L. Curtis, *6th District;* Chas. H. Seagraves, *7th District;* Ashe Lockhart, *8th District;* Edwin Laitinen, *9th District;* O. V. Brumley, *10th District;* H. W. Jakeman, *ex-officio;* W. W. Dimock, *ex-officio.*

Board of Governors: O. V. Brumley, *Chairman;* H. W. Jakeman; W. W. Dimock (= Committee on Journal).

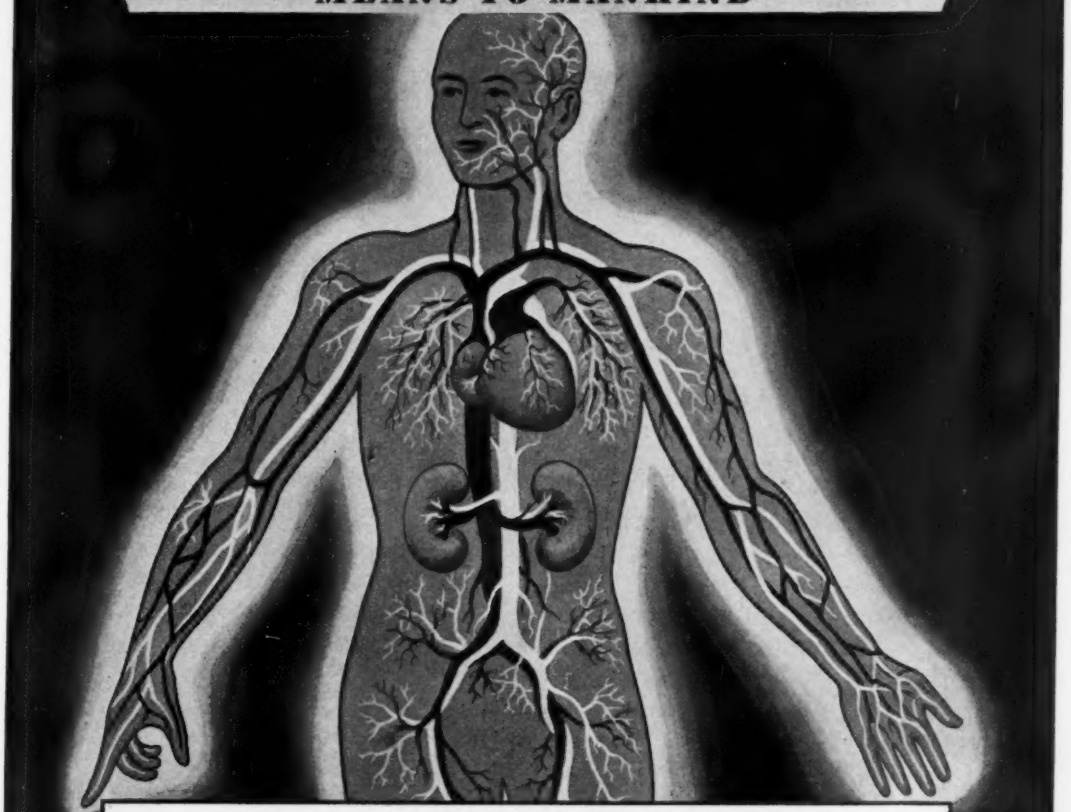
Editorial Staff: L. A. Merillat and J. G. Hardenbergh, *Editors;* J. J. Shaffer, *Assistant to the Editors. Associate Editors:* J. R. Beach, E. A. Benbrook, R. R. Birch, John B. Bryant, J. A. Campbell, C. H. Case, James Farquharson, Ward Giltner, W. F. Guard, Raymond A. Kelser, J. A. S. Millar, John R. Mohler, J. E. Shillinger.

Foreign Language Abstracting: Chas. H. Haasjes (Dutch), E. E. Hamann (German), A. G. Karlson (Scandinavian).

$5.00 per annum. Foreign $6.00; Canada $6.00 Single Copies 75 cts. prepaid in U. S.

Published monthly at 600 S. Michigan Ave., Chicago, Ill., by the American Veterinary Medical Association. Entered as second class matter August 10, 1932, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 538, act of February 28, 1925, authorized August 10, 1932. Contents copyright 1941. Reproduction of any part of this publication is prohibited, unless special permission is given. Permission will be given if the purpose seems justifiable and, in signed articles, if the rights or requests of the author are not violated thereby. Reprints should be ordered in advance. Prices will be quoted after publication. Please send prompt notice of change of address, giving both old and new. Advise whether the change is temporary or permanent. Address all correspondence to American Veterinary Medical Association.

WHAT THE
VETERINARY PROFESSION
MEANS TO MANKIND



Scientific Advancement

● Typical of discoveries of scientific importance which have been made by veterinarians is the fact that in 1598, eighteen years before Harvey began his revolutionary lectures on the circulation of the blood, Carlo Ruino, a veterinarian, though unheeded by his contemporaries, taught from his observations on the horse that "the left ventricle sends blood and vital spirits to all parts of the body but the lungs." A tablet in the Veterinary School at Bologna honors him as discoverer of the circulation.

From Ruino's day to this, many are the veterinarians who bit by bit, through observations made in the research laboratory and the field, have added to the sum total of scientific knowledge.

As Ruino's work would have done had it been heeded, many of their discoveries have opened up entirely new vistas of scientific advancement.

One of a series of advertisements on behalf of the Veterinary Profession published by

ALLIED LABORATORIES, *INC.*

operating

Pitman-Moore Co., Indianapolis, Ind.
Royal Serum Co., Kansas City, Kansas
Sioux City Serum Co., Sioux City, Iowa
Sioux Falls Serum Co., Sioux Falls, S. D.
United Serum Co., Kansas City, Kansas

Copies of this page, free of advertising, sent on request.

CONTENTS—Continued

Clinical Data

Clinical Notes 492
Phenothiazine Toxicity 493
Hypoglycemia of Baby Pigs 494
An Outbreak of Anthrax in Georgia 494
Vitamins in Practice 494
Vitamin E Paralysis 494
The Ferriphagous Bovine 495
Treatment of Ovine Taeniasis with Lead Arsenate—Ernest C. McCulloch and John E. McCoy 496
Subacute Arthritis and Septicemia of Streptococcal Origin in Silver Foxes—R. G. Benedict, Walter Wisnicky and Elizabeth McCoy 498
Virus Infections 500
Bot Treatment 502
Shark Liver Oil Augments Vitamin A in Milk 502

Editorial

United States Pharmacopoeia XII 503
New Regional Society 506

Current Literature

Abstracts: Brucellosis, 507; Human Equine Encephalomyelitis, 507; Dual-Type Gun Dogs, 508; Shortage of Fats and Oils, 508; Preventive Medicine Not Without Danger, 508; The Incidence of Tuberculous Lesions in Man, 508; Milk Strikes, 509; Deferred Milking in Bovine Mastitis, 509; Menstruation in Mammals, 509; Fuadin in Japanese Schistosomiasis, 509.

Book Notices: The Political Life of the AMA, 510; Laboratory Animal Cages, 510; Biologic Aspects of Infectious Diseases, 511; The Nervous Diseases of Cattle, 511; America, 512; Horse and Mule Power, 512; Plants Useful in Upland Wildlife Management, 512.

The News

Student Enrollment for the Academic Year 1941-42 513
AVMA Activities 513
Applications 514
U. S. Government 515
Student Chapter Activities 517
Among the States 518
Coming Meetings 523
Personal Notes 524
Deaths 524

Miscellaneous

Profits by Brucellosis, 464; Anti-Typhus Vaccination, 464; New Duties and Qualifications of BAI Veterinarians, 470; Rio Grande do Sul, 475; The Future of Pharmacology, 485.

Index to Volume XCIX ..... *Index 1-10*
An' Related Topics xx

Journal
of the
American Veterinary Medical Association

Copyright 1941 by American Veterinary Medical Association
600 S. Michigan Ave., Chicago, Ill.

VOL. XCIX DECEMBER 1941 NO. 777

Veterinary Service in the Defense Effort*

COLONEL R. A. KELSER, V. C., U. S. Army
Washington, D. C.

IN THESE TRYING and critical days in which the very foundation of modern civilization is being shaken, hundreds of millions of people in many places throughout the world are looking to our great republic as the one country whose sympathetic understanding, wealth, resources and power can save humanity from the intolerable situation which would inevitably follow success of the dictators responsible for the present world upheaval.

No nation on the face of the earth cherishes more those principles of democracy and freedom, and the right of its people to work in peace and reap the benefits of their labor, than does the United States. Now these rights are challenged! This same challenge to a number of nations having ideals, principles and institutions similar to ours, as you well know, forced war on those who decided to resist, and those too weak to offer resistance were invaded and subjugated and are now under the domination and iron rule of the dictators.

To meet the threat to our rights, institutions and democratic mode of living and working, and to aid those nations which have been forced to fight for the same thing, the United States is now engaged in the greatest preparedness effort in our history. All of you are fully cognizant of this and, I am certain, you recognize the importance and necessity for it.

This stupendous effort places greater responsibilities upon all of our people. No one is exempt. Each must do his part, whether it be in a direct military capacity or in one or more of the many important and highly essential contributions which the civil population must make to insure success.

NATIONAL DEFENSE PROGRAM INCREASES RESPONSIBILITIES OF ENTIRE PROFESSION

Like others of the learned professions, the veterinary profession of the United States has markedly increased responsibilities in connection with this emergency. It is with a great deal of pride that I say to you that in this crisis the profession throughout the land is thoroughly alive to its increased obligations to our country and is fully prepared to meet them effectively.

Let no one think for a moment that in this great preparedness effort veterinary service other than strictly military is not of the greatest importance. Nothing could be more erroneous. To emphasize this, let me point out a few pertinent facts.

The United States has the greatest livestock industry in the world. At the beginning of this year the count of our beef cattle stood at approximately 45,750,000

*Presented at the seventy-eighth annual meeting of the AVMA, Indianapolis, Ind., August 11-15, 1941.

CLASS OF OFFICERS AT CHICAGO FOR SPECIAL INSTRUCTION IN MEAT INSPECTION

Front row (left to right): Lt. Arthur N. Gorelick, Lt. Guy F. Abell, Lt. George O. Thomas, Jr., Lt. Robert O. Allen, Capt. Robert N. Ea...art, Lt. Colonel S. C. Dildine (director), Major Xenophon Shaffer, Lt. Robert L. Willis, Lt. Marion W. Scothorn, Lt. Warren Smeltzer, Lt. George D. Batcheldor.

Back row (left to right): Lt. C. N. Decker (instructor), Lt. Charles W. DeLand, Lt. Paul E. Boyer, Lt. Raymond B. Church, Lt. Joseph W. Harrison, Lt. Richard D. Shuman, Lt. Wesley O. Keefer, Lt. Clarence K. Bennett, Lt. Sidney L. Kaplan, Lt. Ulysses S. McConnell, Lt. James A. Brennan, Capt. Robert W. Cook (instructor).

head; our dairy cattle at nearly 26 million. The number of hogs was found to be about 53 million, and sheep nearly 56 million. In addition to these food animals, we, of course, have our flocks of chickens and other poultry, which run into enormous numbers. Then, aside from food-producing animals, we have approximately 11 million horses and 4 million mules, which are important factors in spite of the "gasoline age."

Countless millions of meat-producing animals go to our abattoirs annually to provide billions of pounds of meat and meat products for our people—the greatest meat-eating populace in the world.

Besides supplying an abundance of meat, meat-food and dairy products, our great livestock industry provides livelihood for over one fifth of our population.

This vast livestock industry could never have been developed, and its present excellent health maintained, were it not for our profession. To preserve and protect it an efficient veterinary service is indispensable. Important as this fact has been in the past, how much greater is its importance now, not only to maintain our own food supply, but also to aid those countries we are pledged to help in resisting dictator aggression. Thus, it is readily apparent what a catastrophe it would be, particularly during this present emergency, should animal diseases become rampant and epizoötics sweep through the country. It is the veterinary profession's responsibility to see that this does not occur, and I am sure that it will not fail. In all of this the civil veterinary profession carries the bulk of the load. It can thus be said, without equivocation, that the rôle of the civil veterinary profession in protecting this nation's livestock industry, and thereby its meat and dairy-products supply, is so vital to the defense effort as to constitute an integral part of it.

THE ARMY VETERINARY CORPS—FROM WORLD WAR I TO THE PRESENT

Having made clear the importance of the civilian veterinarian in the defense effort, let me now tell you something of what the Veterinary Corps of the Army is doing.

Many of you will recall that back in 1917, when the United States found it necessary to enter World War I, we did not have an adequate, well-organized Army veterinary service. Although the National Defense Act of June 3, 1916, provided for the commissioning of veterinarians in the Army, examinations were not completed and commissions not actually issued to those who qualified until April 1917. In

that month commissions were approved for 41 veterinarians of the cavalry and field artillery, and 22 quartermaster veterinarians. The Act provided rank of second lieutenant for the first five years of service; that of first lieutenant during the sixth to fifteenth years, inclusive, then that of captain until 20 years were completed, when the rank of major was reached. This was the maximum rank for veterinary officers under the Act of June 3, 1916. When war was declared in 1917, there were 118 veterinary officers authorized for the Regular Army. There was, of course, authorization to augment this number by such number of reserve officers as necessary, but we did not have an organized Veterinary Corps Reserve. Thus, it became necessary to take steps immediately to recruit a required number of reserve officers.

During our participation in the World War in 1917-18, we had at the peak a total of 2,313 veterinary officers in the service. The enlisted strength of the Medical Department, Veterinary Service, when the war ended was approximately 15,000. Also, during World War I, the United States Army utilized in the United States and overseas a total of approximately 572,000 horses and mules.

When the Army was reorganized in 1920, provision was made for a Regular Army Veterinary Corps of 175 officers. Rank was authorized starting with the grade of second lieutenant and providing for promotion to first lieutenant, captain, major, lieutenant colonel and colonel, after periods of 3, 7, 14, 20 and 26 years, respectively. In 1922, the strength of the Veterinary Corps was reduced, along with other components of the Army, to 126 officers. In 1935, the grade of second lieutenant was eliminated in the Veterinary Corps and its officers were placed on the same basis as the Medical and Dental Corps as regards initial appointment and promotions. Thus, veterinary officers now enter the Army as first lieutenants, reach the grade of captain in 3 years, that of major in 12 years, that of lieutenant colonel in 20 years, and full colonel in 26 years.

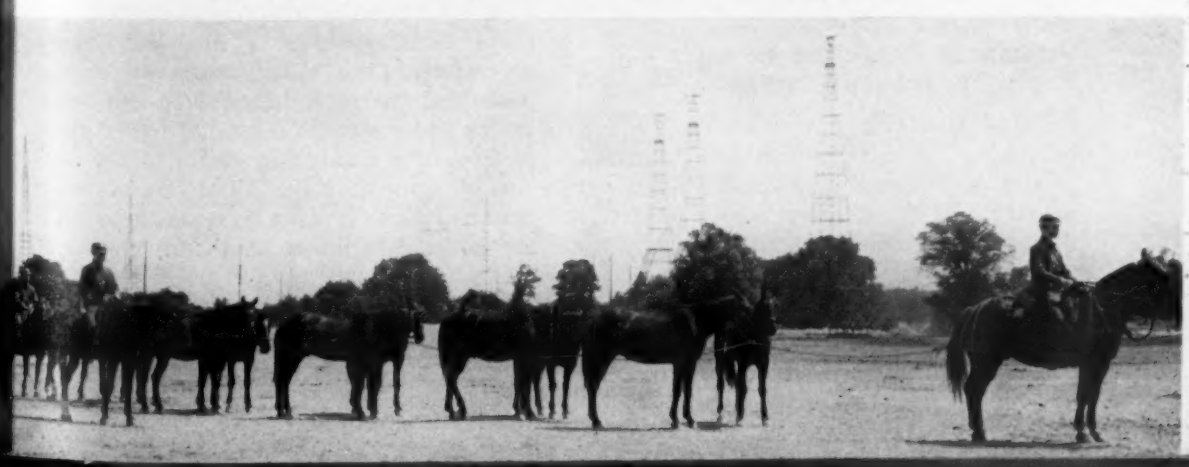
When the present emergency started, the Army Veterinary Corps consisted of 126 officers of the regular establishment, and a complement of 590 enlisted men. Today, we have on active service over 600 officers and approximately 2,200 enlisted men. The officer group consists of 126 Regular Army, 34 National Guard, 2 from the retired list, and the remainder of about 450 from the Reserve Corps. The Veterinary Corps Reserve at the present time consists of approximately 1,535 officers.

DOES "BLITZKRIEG" SPELL DOOM FOR WAR HORSES AND MULES? HERE ARE THE FACTS

When the present defense program was inaugurated, the number of horses and mules in the Army was approximately 23,000. Today it is close to 50,000. Whether or not there will be a further increase will depend upon future developments.

While mechanization of modern armies has greatly reduced the horse and mule requirements, it is erroneous to believe that these animals have been completely eliminated. Failure to provide every bit of mechanization which offers reasonable assurance of advantage over the animal would be tragic. On the other hand, it would be

Lead line used by veterinary service in its system of evacuating animals.



Part of a Chicago class in meat inspection (Lt. Colonel Will C. Griffin, instructor).

serious shortsightedness to fail to provide animals for use under conditions and circumstances where it is evident that the horse and mule can excel over the machine.

The horse and mule can still go places where the motor can't, don't stall because of mechanical trouble and, if the need arises, can push on a critical few miles on empty stomachs.

There has been a great amount of misconception with regard to Germany's use of animals. The great emphasis which has been universally placed on the "blitz" character of Nazi warfare has, naturally, led many to infer that the horse and mule have been completely eliminated. This is far from the truth. In his campaign in Poland, Hitler used about 200,000 animals, and when he invaded Belgium and France, it is reported that approximately 790,000 horses and mules served with his legions. These figures will probably prove more surprising when I tell you that during the World War of 1914-18, the average horse and mule strength of the combined Allied armies in France and Flanders was about 750,000.

VETERINARY INSPECTION OF ARMY FOOD: THE ECONOMY FACTOR

Aside from his duties incident to the evacuation, hospitalization and treatment of sick and injured animals, the Army veterinary officer performs highly important duties in his rôle as inspector of meats, meat-food and dairy products. In addition to the protection of the health of troops against disease transmitted through spoiled, damaged or contaminated foodstuffs, this inspection service results in large potential monetary savings represented by the difference in value between what is offered for delivery and what is finally accepted following veterinary inspection. Rejections for failure to comply with contract and federal specifications constitute a high figure. During the year 1939, for example, the Army Veterinary Corps inspected over 162 million lb. of meats, meat-food and dairy products. Of this amount about 9 million lb. were rejected. The difference in value between what was initially offered and what was finally accepted was over $350,000. How this inspection service has increased is illustrated by the figures for the first quarter of the current year (1941). During this three-month period, the Veterinary Corps inspected a total of 192,947,969 lb. of meats, meat-food and dairy products. Rejections amounted to 7,763,452 lb., with an estimated equivalent monetary saving of about $300,000.

Veterinary station service is provided all important posts and stations in the United States as well as in foreign possessions. Posts and camps having animals are assigned such numbers of veterinary officers as are required, and an adequate detachment of enlisted men. At posts where there are few or no animals, but where considerable quantities of foodstuffs must be inspected, one or more veterinary officers and several enlisted assistants are assigned.

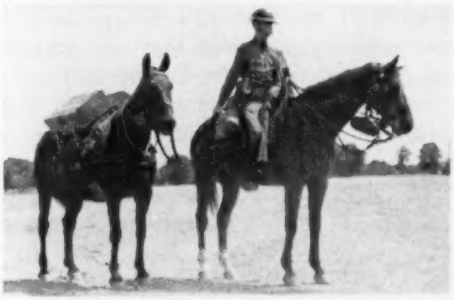
ALLOCATION OF ARMY VETERINARY PERSONNEL

Army expansion and reorganization, and plans for training on a huge scale, have necessitated the enlargement of certain posts and the establishment of many new camps and training centers. Further, there have been a number of shifts in the location of Army animals. All of this has made it necessary to provide increases in veterinary hospital facilities. Authority and funds

for these were obtained and the construction is proceeding satisfactorily.

To tactical organizations there is assigned veterinary personnel according to needs. It might be well to list, for those who may be interested, the prescribed veterinary personnel for the various tactical units:

GHQ, 1 colonel and 1 captain.
Army Hq., 1 colonel and 1 captain.
Corps Hq., 1 lt. colonel.
Hq. Infantry Division (Square), 1 major, 2 enlisted men.
Hq. Infantry Division (Triangular), 1 major, 2 enlisted men.
Hq. Cavalry Division, 1 major, 1 captain, 2 enlisted men.



Veterinary medical equipment transported by pack horse led by mounted soldier of the veterinary service.

Hq. Armored Division, 1 major, 1 enlisted man.
Cavalry Regiment, Horse, 3 captains or lieutenants, 13 enlisted men.
Cavalry Regiment, Horse-Mechanized, 1 lieutenant, 4 enlisted men.
F. Art. Regiment, 75-gun, H-drawn, 2 captains or lieutenants, 14 enlisted men.
F. Art. Regiment, 75-How., Horse, 2 captains or lieutenants, 10 enlisted men.
F. Art. Battalion, 75-How., Pack, 2 lieutenants, 9 enlisted men.
F. Art. Reg. Composite, 1 off., 5 enlisted men.
F. Art. Regiment, 75-gun, H. D., Tri. Div., 1 captain, 2 lieutenants, 12 enlisted men.
Division Artillery, Cav. Div., 2 off., 14 enlisted men.
Veterinary Troop, Cav. Div., 1 captain, 3 lieutenants, 64 enlisted men.
Veterinary Company, Separate, 1 captain, 6 lieutenants, 184 enlisted men.
Quartermaster Squadron, Remount, 1 captain, 4 lieutenants, 32 enlisted men.
Quartermaster Squadron, Cavalry Division, 1 off., 8 enlisted men.
Quartermaster Troop, Pack, Medical Dept., personnel not yet specified.
Quartermaster Battalion, Wagon, 1 captain, 3 lieutenants, 16 enlisted men.
Quartermaster Company, Refrigeration, 1 captain, 1 lieutenant, 8 enlisted men.
Veterinary Evacuation Hospital, 1 lt. colonel, 1 major, 3 captains, 1 lieutenant, 89 enlisted men.
Veterinary Station Hospital, 1 captain, 3 lieutenants, 78 enlisted men.
Veterinary General Hospital, 1 lt. colonel, 1 major, 3 captains, 5 lieutenants, 263 enlisted men.
Veterinary Convalescent Hospital, 1 lt. colonel, 1 major, 3 captains, 4 lieutenants, 249 enlisted men.
Medical Laboratory, Army or C. Z., 1 major, 3 enlisted men.

VETERINARY CORPS LABORATORY SERVICE

Another important Veterinary Corps activity is our laboratory service. The Army Veterinary School at the Army Medical Center, Washington, D. C., maintains one of the finest veterinary laboratories in the world. There various diagnostic tests and procedures are carried out, examinations and analyses of foodstuffs of animal origin are made, and biologic products are manufactured. This laboratory produces all of the encephalomyelitis vaccine used for the immunization of Army animals. It also makes equine infectious abortion bacterin, mallein, tuberculin, various diagnostic

Army veterinary motor ambulance.

serums, antigens, etc. This laboratory also is engaged in various research investigations of importance to the military service.

About two years ago we established a research laboratory at the Front Royal remount depot. This unit is devoted to the study of equine diseases of particular importance to the military service. Studies of equine influenza and its complications and periodic ophthalmia are major projects.

It will be readily apparent that a research laboratory thus located is in an advantageous position with regard to cases and material. In connection with the recent purchase of large numbers of animals, many cases of influenza and strangles have occurred among the animals coming into this depot and a splendid opportunity has been afforded the laboratory to study these diseases.

Veterinary laboratory service also is maintained at Fort Sam Houston, Texas; and at Fort Mason, Calif., our service operates a splendid food-inspection laboratory at the quartermaster depot.

Corps area laboratories have been established in each of the nine corps areas, and department laboratories in the Panama and Puerto Rican departments. Provision is made for a veterinary section in each of these laboratories.

FORAGE INSPECTION

Forage inspection is another important function of the Army veterinary service. As a part of the course for veterinary officers at the Army Veterinary School, instruction in forage inspection is given under a coöperative agreement with the U. S. Department of Agriculture. This arrangement makes it possible to have our veterinary officers receive instruction from experts of the Agricultural Marketing Service and those who qualify are licensed as federal hay inspectors by the Secretary of Agriculture. Under such license veterinary officers are able to issue federal hay certificates which have legal standing in any contest.

Enlisted men of the Medical Department of the veterinary service are likewise given instruction in forage inspection under the above-mentioned arrangement, to qualify them as assistants to veterinary officers in this work. They are not, however, licensed by the Department of Agriculture.

It goes without saying that under the present preparedness program, training for all military personnel is of paramount importance. The Medical Department has made adequate provision to insure that all of its personnel, both commissioned and enlisted, receives proper training.

SPECIAL TRAINING FOR RESERVE OFFICERS

At the Army Medical Field Service School, Carlisle, Pa., courses are given to especially fit Medical Department officers for field duties. The regular basic and post-graduate courses which were given at the Army Veterinary School prior to the present emergency have been suspended and in their place shorter courses for reserve officers instituted. These include courses in laboratory work and forage inspection.

At Chicago, instruction in military meat inspection is given to approximately 20 veterinary reserve officers monthly. To date, 140 officers have had the advantage of these courses.

Veterinary reserve officers are assigned to various of our larger stations, remount depots and remount purchasing and breeding headquarters in order to train them for duties as commanding officers, as executive officers of veterinary hospitals, as station veterinarians, as remount depot veterinarians and as purchasing board veterinarians.

Veterinary service also is provided in our various foreign possessions, including the Philippines, Hawaii, Panama, Puerto Rico and Alaska. Provision has been made to extend our service, as required, to such of the Army bases as may be set up in the Atlantic and Caribbean.

Reserve officers are eligible for assignment to foreign service provided they so wish.

Training of enlisted personnel of the veterinary service is carried out at all posts and stations, but special training for veterinary technicians is given at the Army Veterinary School, Army Medical Center, Washington, D. C., and at Fort Bliss, Texas.

I have previously indicated that at the present time there are approximately 1,535 officers in the Veterinary Corps Reserve. This figure is considerably in excess of the War Department's procurement objective. Because of this fact the routine commissioning of veterinarians in the Veterinary Corps Reserve has been suspended. The only exception is in the case of the graduate veterinarian who has been regularly

Inoculating chick embryos for equine encephalomyelitis vaccine production at the Army Veterinary School.

inary Corps Reserve this means the grade of first lieutenant, and the individual can not be over 37 years of age. The recommissioning of individuals who served in the previous World War and the commissioning of older veterinarians in grades above first lieutenant are not authorized at the present time.

COMMENT

I believe that from what I have said it will be readily recognized that the veterinary profession of the United States, both in and out of the Army, has a place of great importance in the present emergency. I am positive that we are all fully alive to our responsibilities and obligations and that they will be assumed and discharged in a manner befitting the high efficiency and standing of the profession of this country.

Army Veterinary School, Army Medical Center, Washington, D. C.

inducted into the military service under the Selective Service and Training Act. As you may know, the Secretary of War recently approved a plan whereby veterinarians who are inducted into the military service, if found fully qualified for commissions, may be commissioned and permitted to serve in their professional capacity.

Another question frequently submitted to the Surgeon General's Office comes from veterinarians in the upper age brackets and from those who served during the last World War or who formerly held reserve commissions. Under present War Department policy all new commissions, when authorized, are given in the lowest grade unless the individual has previously held a commission in a higher grade. In the Veter-

Corner of food-chemistry laboratory, Army Veterinary School.

Which Way Brucellosis Control?*

C. U. DUCKWORTH, D.V.M.
Sacramento, Calif.

THE DISCUSSION OF controversial questions not infrequently results in blasts that would do credit to a mule skinner, but instead of solving problems, such blasts add to them. It is hoped, therefore, that any sharp difference of opinion that I might express here will be regarded as merely an exercise of my rights, and that the opposing opinion is merely an exercise of the rights of the opposing party. Such rights are among the legacies handed down to us in this country, and not accorded to people everywhere.

From time to time in the past several years we have all read articles, statements and stories of socialized medicine as contrasted with medicine privately practiced for profit. Each plan has its proponents and its opponents, and each group has the right to express opinions. It is the nature of some people to be timid in speaking for their rights and it is the nature of others to be blunt and outspoken. Some do not recognize a cyclone, while others tremble at the slightest breeze. I believe that most of us are between these two extremes and that we stand squarely on our feet, recognize our problems as they approach and deal with them sensibly, to the best interest of all concerned: the country as a whole, the community in which we live, the industries with which we work, our families and ourselves.

With this digression from the topic at hand, I hope to be able to make my purpose more clear.

Bang's disease has troubled livestock owners and veterinarians for a long time. We have seen many treatments come and go that, in effect, have been a contract between the owner and his veterinarian. We have seen livestock diseases eradicated or controlled through agencies functioning at the expense of the people, and other diseases largely through the efforts of the practicing veterinarians. At this point we find a blending of two theories of medicine, namely, state medicine and private practice. It has occurred to me that the line of demarcation between the two need not be indistinct unless it is desired to make it so.

Tuberculosis is a classic example of an established disease in which treatment, in so far as cattle are concerned, is contraindicated. On the other hand, contagious pleuropneumonia, foot-and-mouth disease, and dourine are classic examples of unestablished diseases of the same category. In each case slaughter was and is resorted to.

However, we find such diseases as anthrax and hog cholera controllable by prophylactic treatment, and many others controllable either by prophylaxis or treatment.

For several years Bang's disease has been at the crossroads. Some contend that it belongs on the regulatory side—to be handled by destruction of affected animals—while others contend that because of its very nature the disease can through study be controlled by prophylactic measures. Despite the fact that I am and have been throughout practically all of my working years a regulatory man in some kind of governmental service, I have been steadfast in the second classification. In 1937, at the U. S. Livestock Sanitary Association meeting in Chicago, I was the sole opponent to the so-called test and slaughter method, and advocated extensive research and study for the control of the disease by other means. In 1938, at a meeting of the same body, I again voiced opposition, but this time there were a couple of other voices raised with mine. I was aware of the fact that immunization methods had been tried since 1911, but I was also aware that the government had launched the first comprehensive large-scale experiment with the use

*Presented before the California State Veterinary Medical Association, Hollywood, Calif., June 23, 1941.

of a strain of organism which under limited experiments by the Bureau at its experiment station gave indication of excellent results. I had seen herds of cattle blood-tested regularly for years suddenly blow up with disastrous results to the owner. I had seen blood lines dissipated through voluntary attempts to clean up with the test and slaughter method and, while occasionally good results were observed over a long period of time, under California conditions results were not favorable.

The self-limiting nature of the disease indicated to me that ultimately we could find a way to assist nature in controlling it. The expenditures of large sums of public funds did not seem justifiable if we were traveling down the wrong road or even a questionable road. You know the story since last December, when Dr. John R. Mohler announced at Chicago the results obtained through vaccination, and advocated vaccination as an adjunct in the eradication of Bang's disease. This is an enormous step ahead and I am hopeful that in the not too distant future we can see vaccination as an adjunct to test and slaughter in the same light that we have seen the steam train developed to the proportions it has since the time it was but an adjunct to the stage coach.

This now brings us to other fundamental questions. Who is going to do the job and how is it going to be done? Is this a matter of state medicine or private practice? This association [California] and its committees have heard me say many times that Bang's disease vaccination was in prospect and that unless the practicing veterinarian through his associations prepared himself to handle the business and fought for his right to handle it, it would become governmental business and be done by governmental agencies. Just how true were these statements or prognostications? Under date of March 25, 1941, the following article appeared in the *Western Livestock Journal*. I quote:

> Dairymen in the state of Washington who have applied for vaccination of calves with strain 19 Bang's vaccine are being visited by veterinarians from the U. S. Bureau of Dairy Industry, who are assisting in a drive to eradicate Bang's disease from that state. Federal veterinarians have started to work in the northern end of the state, and are following rural mail routes, blood testing every herd and vaccinating calves where vaccination is requested.
>
> First calf to be vaccinated under this program was an Ayrshire on the Buitenzorg farm near Lynden in Whatoom county. Dr. C. C. Merriman clipped a tag on her reading "U. S. Vaccinated, No. 1."

Can there be any question as to whether the program as quoted here is a governmental program or one of private practice? It is not my purpose to say which theory is right and which theory is wrong, but I think it is my right to present my views of the subject in its entirety. If Bang's disease is a condition amenable to control through prophylaxis, does it not then fit itself into the field of private practice, and if so what to do about it? It has been my privilege to talk to many veterinarians and to many more livestock owners and I find an almost universal complaint that the cost of employing a veterinarian for the vaccination of calves is too high; that the product can be purchased from the biologic salesman or from the drug store and used by the owner at a fraction of the cost charged by the veterinarian. Maybe this is not true, but if enough people think it is true, it might just as well be true as far as the effect is concerned.

This is a country in which every man has a right to make a living in his own way as long as he stays within the mandates of the law. Many men have had to change their business because of new business in competing fields; many men have had to adjust their business to meet new competition coming into their fields. I feel that the veterinarian is now at this point in our economic structure and in order to combat a situation facing him, he doesn't have to try anything new; he merely has to repeat what history indicates was successful. The largest practices of veterinary medicine in the United States were built on contract business. These contracts in some instances provided for routine calls, others for special calls, others for both. It is my opinion that Bang's disease fits itself admirably into the category of routine calls.

Why is it not logical for the practicing

veterinarian to enter into contracts with livestock owners, such contracts to specify a designated number of calls yearly for the purpose of vaccinating calves. This would still leave him free and open for special calls even with the contract owner. In talking over a program of this kind with many livestock owners, I found them practically all in agreement and many stated that if they knew a veterinarian were going to call at a prescribed time, some of the work that they ordinarily do with their livestock would be deferred until the practitioner came, provided it were done at a reasonable figure. Let us analyze this statement briefly. If a veterinarian were calling at a farm for the purpose of vaccinating calves and additional work were there for him, could he not do that work for the price of an office call rather than a ranch call? It is my opinion he would get a lot of business if he did. A system of records kept for the contract livestock owner could, I believe, be made of such value to him that he would seek further advice and assistance from his veterinarian instead of less. Maybe I'm wrong. Maybe this idea isn't worth a whoop. But I do know that the biologic salesman and the drug store can and do sell biologic products directly, that the veterinarian is better equipped than either to serve the industry through the use of these products, that he must do something now to demonstrate the additional knowledge he has, and that it can be profitably used by the livestock owner, or the business will gravitate to other hands.

I do not wish to appear pessimistic, because I am exactly the opposite. I am optimistic provided the situation is recognized and met. Briefly:

1) Bang's disease work can become a governmental function and the work done officially by governmental employés.

2) It can be done by the practicing veterinarian under a system of service to the livestock owner.

3) It can be done largely by the owner himself with material purchased directly.

Enormous expenditures in our defense program would seem to me to preclude the possibility of great appropriations for nonessential functions, and in my opinion Bang's disease can be so classed because it can be handled as a private transaction by the livestock owner. If such is true, individual initiative will be the deciding factor, and I am reluctant to believe that the wisdom of the veterinary profession is such that despite its better qualifications to do the job on Bang's disease control, it lets the job slip through its fingers and thereby fails to properly serve the livestock industry of this great livestock state.

Profits by Brucellosis

Not by gyp tactics, but by legitimate means, H. A. Holdridge of Ohio, beginning in 1936, made money by buying good cows on their way to the abattoir after having been condemned as reactors to the serologic test for brucellosis. The cows cost from $60 to $100 a head, and after careful handling and segregation on two farms, the offspring were sold at high prices: $1,625, $750, $475, $375, among the figures reported. The Holdridge Farm consignment at the May Royal Steadfast sale brought an average of $541.67. The details of the adventure are fascinating; the results speak for themselves.—*Condensed from Hoard's Dairyman, Oct. 18, 1941.*

Anti-Typhus Vaccination

The precise immunizing value of anti-typhus vaccine is being tested on a large scale in Bolivian Indians by the United States Public Health Service working with local physicians. In the highlands of Bolivia, where disastrous epidemics of this louse-borne infection occur, some 3,600 Indians have been vaccinated in this study. The European war has made the control of typhus increasingly important. The disease is particularly threatening in war-torn territory.

It will be recalled that Adolph Eichhorn delivered some American-made anti-typhus vaccine to the Balkans last year.

Requisites for a Practical Intracutaneous Test for the Detection of Trichina Infection in Swine*

BENJAMIN SCHWARTZ, Ph.D.
Washington, D. C.

THE PRINCIPAL SUGGESTIONS that have been made at various times for the control of human trichinosis by governmental regulation include (1) microscopic inspection of pork for trichinae; (2) control of garbage feeding so as to eliminate, from the feed of swine, garbage as collected; and (3) skin tests designed to detect trichina infection in hogs immediately before slaughter.

MICROSCOPIC INSPECTION

Of these proposals, only microscopic inspection has been tried on a large scale. It has been used quite extensively in several European countries as a routine procedure in meat inspection and is considered by some European authorities to be very effective in reducing sharply, if not eliminating almost entirely, trichinosis from human beings and swine. For a number of years the United States had a partial microscopic inspection of pork for trichinae, designed only to meet the requirements of foreign trade; at no time was such inspection considered by meat-inspection experts to be a useful prophylactic procedure in this country. The experience in European countries with microscopic inspection has warranted the belief that such inspection can not be relied upon to detect all cases of infection with trichinae. Consequently, this procedure has the disadvantage of giving a false sense of security to persons who are fond of raw or slightly cooked pork.

Although the regulations governing the meat inspection of the United States Department of Agriculture make no provision for microscopic or other inspection of pork for trichinae, ample provision is made to safeguard the public from acquiring trichinae through the consumption of pork-containing food products customarily eaten without cooking. Under federal meat inspection no article of a kind prepared to be customarily eaten without cooking contains any muscle tissue of pork unless the pork has been subjected to a temperature sufficient to destroy all live trichinae, or other prescribed treatment. The treatments prescribed by the chief of the Bureau of Animal Industry to devitalize trichinae in pork are (1) heating, (2) special refrigeration and (3) special processing. Under the prescribed heating it is required that all pork-containing products of kinds mentioned must be so heated that they will attain in all parts a temperature of not less than 137 F. The required refrigeration involves the subjection of pork or of articles containing pork muscle tissue to a temperature of not higher than 5 F. for a continuous period of not less than 20 days, in the case of products not exceeding 6 in. in diameter, hung up singly or packed in boxes not exceeding 6 in. in thickness; in the case of pork or products packed in barrels or tierces, the period of refrigeration is extended to 30 days. If the temperature of the freezers is maintained at not higher than —10 F., the period of refrigeration may be reduced to 10 days for pork or products not exceeding 6 in. in diameter as aforementioned, and to 20 days for pork or products packed in barrels or tierces. If the temperature of the freezers is maintained at not higher than —20 F., the period of refrigeration may be reduced to 6 days in the case of pork or products not exceeding 6 in. in diameter, and to 12 days in the case of pork or products packed in barrels or tierces. Special

*From the Zoölogical Division, Bureau of Animal Industry, U. S. Department of Agriculture; presented before the Section on Sanitary Science and Food Hygiene at the seventy-seventh annual meeting of the AVMA, Washington, D. C., August 26-30, 1940.

curing methods, in lieu of the required refrigeration or heating, involve the destruction of trichinae by salt at specified temperatures for definite periods. These curing methods, based on empirical formulas, were tested in the course of extensive investigations and found to be effective in destroying the vitality of trichinae before their use was given official sanction. Thousands of products so processed under federal meat inspection have been examined from time to time by the laborious method of digestion and in no instance did any of these products contain trichinae capable of developing in human beings or other susceptible hosts. These results, therefore, show conclusively that processing for the destruction of trichinae, as enforced by the Bureau of Animal Industry, is an effective safeguard against human trichinosis.

CONTROL OF GARBAGE FEEDING

The control of garbage feeding, by requiring that the garbage be cooked before it is made available to swine, has not been undertaken in any country primarily as a prophylactic measure for trichinosis, but rather as a method of preventing the spread of hog cholera, foot-and-mouth disease and other infectious diseases of livestock. In England, where the feeding of garbage to swine is under strict control, with requirements that this feed must be heated to the temperature of boiling water before it is made available to pigs, the human population appears to be remarkably free from clinical and subclinical infection with trichinae, and these parasites are not known to occur in swine, according to available information.* The incidence of trichina infection in pigs in Canada, where the sterilization of garbage is required by law, is much lower than in the United States. The sterilization of garbage, therefore, appears to be a definite control measure for swine trichinosis, the source of practically all human infections with this disease.

*Since this article was written, several hundred cases of human trichinosis, due principally to the eating of raw sausage, have been reported in England.

BIOLOGIC TESTS

In recent years suggestions for the control of human trichinosis through the elimination of trichina-infected hogs, as determined by skin or other biologic tests, have gained considerable prominence. The wide use of such tests, particularly the skin test, for the detection of trichina infection in swine has been advocated from time to time, particularly by research workers, on the basis of limited experimental work.[1-3]

Since the announcement by Bachman[4] in 1928 that experimental trichinosis in rabbits could be diagnosed by the intracutaneous injection into these animals of an antigen prepared from trichina larvae, there has been much activity, especially in the last two or three years,[3,5] designed to apply this test to the diagnosis of trichina infection in swine as a routine meat-inspection procedure. Shortly after the appearance of Bachman's first paper, the writer and McIntosh[6] began to experiment with the possibility of diagnosing trichinosis in swine by the intracutaneous injection of trichina antigen. Although the initial results appeared quite promising, later work by the writer and his associates[7] showed this test to be nonspecific in some instances, since noninfected hogs sometimes gave clear-cut reactions and some infected hogs failed to show a skin hypersensitiveness to the injection of trichina

[1]Augustine, D. L., and Theiler, H.: Precipitin and skin tests as aids in diagnosing trichinosis. Parasitol., xxiv (1932), pp. 60-86.

[2]Hunter, G. W. III: Human *Trichinella spiralis* infections and the Bachman precipitin test. Am. J. Hyg., xiii (1931), pp. 311-319.

[3]Lichterman, A., and Kleeman, I.: Detection of Trichinella infestation in hogs by the intradermal tests. Am. J. Public Health, xxix (1939), pp. 1098-1102.

[4]Bachman, G. W.: An intradermal reaction in experimental trichiniasis. J. Prevent. Med., ii (1928), pp. 513-523.

[5]Schwartz, B., *et al.*: Report of the Committee on Parasitic Diseases. Proc., 43rd ann. meet., U. S. Live Stock Sanitary Assn., Chicago, 1939 (1940), pp. 301-307; pp. 301-303: Skin tests for the detection of trichina infection in swine.

[6]Schwartz, B., and McIntosh, A.: Skin reactions in experimental trichinosis in pigs. J. Parasitol., xvi (1929), pp. 104-105.

[7]Schwartz, B., McIntosh, A., and Mitchell, W. C.: Non-specific skin reactions in pigs to the injection of trichina extracts. J. Parasitol., xvii (1930), p. 114.

antigen. Continued work on this problem in the Zoölogical Division of the Bureau of Animal Industry has confirmed, in the main, the fact that antigens of various types prepared from trichina larvae do not possess the high degree of specificity required for the routine diagnosis of trichina infection in swine.

In a recent paper Spindler and Cross[8] showed that, on the average, nearly 30 per cent of the tests on 149 infected hogs failed to elicit clear-cut positive reactions, and somewhat over 22 per cent gave reactions that were classified by them as doubtful because they were not clear-cut; only about 48 per cent of the tests on infected hogs gave definite, clear-cut reactions. In 1,344 uninfected hogs, somewhat over 77 per cent of the tests gave negative reactions, nearly 9 per cent gave positive reactions and the remainder gave doubtful reactions.

Considering the fact that nearly 50 million swine are slaughtered annually under federal inspection, it would follow that the application of a skin test known not to be specific would tend to produce confusion rather than to clarify a situation that has a direct bearing on human health. Unless a skin test or other practical biologic test can be devised that is known to detect all or practically all cases of trichina infection in swine, it would not be valuable from a standpoint of prophylaxis. Actually, it might do considerable harm because, as already stated in connection with the discussion on microscopic inspection, an imperfect diagnostic test would tend to create a false sense of security in the minds of persons who like raw pork. Knowledge that such a test was being applied might, and in all probability would, lead to laxity in cooking pork in the home and elsewhere, and thereby undo much that has been gained by repeated warnings that pork must be well cooked to safeguard health. As a consequence of this, the good that the test might accomplish, by eliminating from the channels of trade a certain proportion of pork infected with trichinae, would be offset wholly or in part by permitting other pork, also infected with these parasites, to be sold on the assumption that it is free from trichinae. All of the arguments that have been marshalled against microscopic inspection apply just as forcefully to a skin or other biologic test not established on a sound and extensive foundation of experimentation.

To be acceptable for the diagnosis of trichinosis from a meat-inspection standpoint, a skin test would have to be sufficiently sensitive to detect infections with trichinae of various intensities in all or nearly all infected hogs, and to elicit no reactions in uninfected hogs. Moreover, the reaction in all cases would have to be sufficiently distinct, so as to be readily recognizable by inspectors engaged in meat inspection. The reacting skin area would have to stand out in sharp contrast not only to the intact, normal skin, but also to the skin that is wrinkled, discolored, bruised, abraded or otherwise abnormal in appearance. The skins of hogs that come to slaughter frequently show blemishes of various sorts which could be easily confused with the inflammatory swelling produced by the injection of trichina antigen. Moreover, the test would have to be perfected so that the reactions could be noted always within a short time after the injection of the antigen. The American meat industry is geared to highspeed operations and the tests would have to mesh well with the general plan of operation prevailing in large abattoirs.

Doubtful or positive reactions in negative hogs, such as have been obtained in the course of experimental work conducted in the Bureau of Animal Industry,[8] would impair the use of the test by placing an excessive burden not only upon the meat industry, but also upon the consumer. Before being released for sale, carcasses of all reacting pigs would have to be treated for the destruction of live trichinae by one of the approved methods prescribed by the chief of the Bureau of Animal Industry. This would add considerably to the cost of pork, particularly in view of the fact that a

[8]Spindler, L. A., and Cross, S. X.: Intracutaneous tests for the detection of trichina infections experimentally and naturally acquired by swine. Proc. Helminth. Soc. Washington, vi (1939), pp. 37-42.

Lancefield Group E Streptococci in Cervical Abscesses of Swine*

H. J. STAFSETH, B.S., D.V.M., M.S., Ph.D., and IVORY CLINTON, B.S.
East Lansing, Mich.

THE HEAD OF a 7-month-old pig was recently brought to our laboratory for bacteriologic examination. For some time a considerable number of hogs from the same herd had had cervical abscesses. No clinical symptoms had been observed. The abscesses were discovered during postmortem inspection in a slaughterhouse.

GROSS PATHOLOGIC AND BACTERIOLOGIC EXAMINATION

Six abscesses, approximately the size of walnuts, were found in the submaxillary and subparotid regions. These abscesses were covered with thick, creamy pus of greenish tint. Blood-agar plates made from three of them yielded pure cultures of a hemolytic streptococcus.

PREVIOUS OBSERVATIONS

Cervical abscesses in swine have been observed before. In 1898, Hutyra and Marek[1] described "an affection in young hogs in the course of which the submaxillary and subparotid lymph glands developed an inflammatory swelling and later suppuration. Bipolar bacilli and streptococci were found." The disease lasted several weeks, but nearly all of the pigs recovered. They called this disease strangles in hogs.

Under the same name Newsom,[2] in 1937, described a similar condition in a herd of swine in Colorado. The animals had been wheezing and coughing. They were not greatly depressed and showed no fever. On autopsy numerous abscesses were found in the region of the throat. The pus was yellow to greenish and yielded pure cultures of hemolytic streptococci showing fermentation reactions as recorded in table I. Newsom states that streptococci have been observed in cervical abscesses of swine by Dr. A. T. Kinsley of Kansas City. We have found no published account of his observations other than Newsom's statement.

DESCRIPTION OF ORGANISM

The hemolytic streptococcus isolated by us was subjected to a detailed study in order to see if it might be the same as that isolated and partly described by Newsom. There is no available description of the streptococci mentioned by Hutyra and Marek or by Kinsley.

Morphology and Staining.—This organism was a gram-positive streptococcus, about 1μ in diameter. It occurred in long chains, made up of well-rounded cocci, when grown in broth. On tryptose agar it formed shorter chains in which the individual cocci appeared somewhat elliptical. Well-defined capsules were observed in recently isolated cultures. After continued artificial cultivation the capsules disappeared or became indistinct.

Cultural Characteristics.—On blood-agar plates the colonies were small (about 1 mm.

*Journal article No. 538, n.s., Michigan Agricultural Experiment Station.

[1]Hutyra, F., and Marek, J.: Strangles in hogs. Special Pathology and Therapeutics of the Diseases of Domestic Animals (3rd Am. ed.), i, p. 482.

[2]Newsom, I. E.: Strangles in hogs. Vet. Med., xxxvii (1937), pp. 137-138.

(*Continued from preceding page*)

rather large percentage of nontrichinous hogs are known to react to the skin test.

CONCLUSION

In brief, while the possibility of diagnosing trichinosis by means of a skin test should not as yet be dismissed as entirely beyond the realm of practicability, the facts already brought to light give no basis for pinning too firm a faith on the skin test as a possible routine procedure for the detection of trichina infection in swine.

TABLE I—Comparison of Fermentation Reactions of Group E Streptococcus Isolated in Michigan with Those of Newsom's Streptococcus

Group E Streptococcus	Newsom's Streptococcus
Salicin ± (2 out of 8 neg.) 24-96 hrs.	—
Inulin —	—
Starch —	*
Dextrin —	+
Raffinose —	—
Trehalose +	*
Lactose —	—
Sucrose +	+
Maltose +	+
Levulose +	+
Mannose +	—
Galactose +	*
Dextrose +	+
Arabinose ± (2 out of 6 pos.)	—
Rhamnose —	—
Xylose —	—
Inositol —	—
Mannitol + 24-96 hrs.	+
Sorbitol ± (2 out of 8 pos.) 48-96 hrs.	+
Dulcitol —	—
Glycerin —	—

*Not used.

in diameter), grayish white, opaque and surrounded by a large, clear zone of hemolysis. Broth cultures became slightly cloudy with a moderate amount of smooth sediment. Hanging drops, made from the broth cultures, showed long chains of nonmotile cocci.

Biochemic Properties. — The biochemic properties, determined by repeated tests on two strains isolated from different abscesses, are recorded in tables I and II. Table I also shows the fermentation reactions of Newsom's organism as reported by him. It will be noticed that the two organisms differ considerably with respect to fermentation reactions, the only reactions available for comparison.

Serologic Grouping.—After preliminary serologic grouping tests the two strains, studied as to morphology, cultural features and biochemic properties, were sent to Dr. Rebecca C. Lancefield at the hospital of the Rockefeller Institute for Medical Research, New York City, for final identification. She reported as follows:

I was much interested in the two strains of hemolytic streptococcus that you sent me. Both were members of Group E, and not the same serological type as Strain K131. Strain K131 is apparently distinct in its type reactions from the other two Group E strains that I have, *i.e.*, Strains K128 and K129.

These Group E strains from abscesses in lymph nodes of swine are interesting because Group E has been reported in the literature only rarely. As far as I can remember, Miss Coffey at Albany and Dr. Plastridge at Storrs are the only ones who have reported finding Group E. Their strains were, I think, from milk or from dairy products.

As far as I (H. J. S.) can find from the

TABLE II—Cultural and Biologic Characteristics of Group E Streptococcus Isolated in Michigan

Appearance on blood	Strong hemolysis	
No growth on 40% bile-blood agar	Not bile-soluble	
Growth	at 10 C.	± *
	at 40 C.	—
	at 45 C.	—
Survival at 60 C., 30 min.		—
Growth in Presence of	2% NaCl	+
	4% NaCl	—
	6.5% NaCl	—
	pH 9.2	+
	pH 9.6	+
	0.1% methylene blue	± †
	0.3% methylene blue	± †
NH_3 produced from peptone		—
Litmus Milk	Strong reduct. before coagul.	—
	Acid	—
	Curdled	—
	Peptonized	—
Gelatin liquefied		—
Active fibrinolysis		—
Starch hydrolyzed		—
Esculin split	+ in 24 hrs. in broth + in 4 days on agar plate (streak)	
Final pH in glucose broth		4.6-4.8
Motility		Nonmotile

*Apparently no growth, but a subculture grew at 37 C. in 24 hours.
†Slight reduction in milk; no change in broth.

available literature, the credit for isolating identified group E strains should go to Dr. J. H. Brown,[3] who obtained them from certified milk.

SOURCE OF THE INFECTION

As group E streptococci have heretofore been isolated only from certified milk, inquiry was made as to possible contact between the dairy cattle and swine. We were assured that there was none. The dairy products used in the feed of the hogs were always pasteurized. Only one cow was near the hogs. This cow had what was thought to be actinomycosis because of a discharging swelling on the jaw. Samples of the pus from the lesion on the jaw and milk from each quarter were obtained for examination. Hemolytic streptococci were not found, nor did we find any Actinomyces. An organism resembling *Corynebacterium pyogenes* was isolated from the pus. We could not, therefore, obtain evidence as to the source of the infection. More investigations should have been made in this direction, but conditions were such that the work had to be discontinued, at least for some time.

It was suggested that carelessness in connection with hog-cholera vaccination might have been responsible for these abscesses. The veterinarian who did the work had taken no antiseptic precautions whatever in injecting the serum and virus. We learned that injections were made in a region close to the location of the abscesses. Strict antiseptic precautions were advised in connection with anti-hog-cholera vaccination. During the spring we were informed that no further trouble had been encountered. If this is so, we may wonder if the primary source of group E streptococci may not be swine.

Fermentation reactions of streptococci are subject to a considerable amount of variation. This is especially true when the work of different investigators is compared. Hence, it is not impossible that the streptococcus isolated by Newsom might also belong to group E.

[3]Brown, J. H., Frost, W. D., and Shaw, M. J.: Hemolytic streptococci of the beta type in certified milk. J. Inf. Dis., xxxviii (1926), pp. 381-388.

SUMMARY

Lancefield group E streptococci were isolated from cervical abscesses of a hog. Heretofore, group E streptococci have been isolated only from certified milk.

New Duties and Qualifications of BAI Veterinarians

During a visit to the AVMA office in October, Chief John R. Mohler of the U. S. Bureau of Animal Industry explained the new regulations of the Civil Service Commission on the examination for the positions designated as junior and assistant veterinarians. Of particular interest is the expansion of the duties of assistant veterinarians. Quoting:

> *Assistant Veterinarian.*—To perform the duties of junior veterinarian and in addition to inspect dairy and other food products for CCC camps; to make milk-sanitation surveys and to advise state and local health departments on proper methods of milk sanitation for the U. S. Public Health Service; and to perform related duties as assigned.

The duties of junior veterinarian are the well-known functions of food inspection, testing animals for disease, sanitary inspections and aid in the control and eradication of livestock diseases.

Under "Physical Ability" the regulations are modified so as to admit competents over the age limit and otherwise not physically disqualified for the position by the rigid examination given. Such appointees are eligible for temporary duty, but if affected with a remediable defect, their status may be changed from temporary to probationary.

The document entitled "United States Civil Service Examinations, No. 143 (unassembled)" appears to spell expansion of the veterinary service to the needs of the national defense program. For details too extensive to reprint here, those interested may obtain a copy by addressing the United States Civil Service Commission, or Chief John R. Mohler, Washington, D. C.

The Incidence of Glomerulonephritis in Domesticated Animals*

R. F. LANGHAM, A.B., M.S., and E. T. HALLMAN, D.V.M.
East Lansing, Mich.

THE AUTHORS HAVE made a study of 236 cases of nephritis in domesticated animals, among which only seven cases were classified as glomerulonephritis. Although the pathology of these cases was not identical with that described for this condition in man, the extent and distribution of glomerular lesions appeared to justify this classification.

The technic for preparing the material for study consisted of fixation of the tissues both in 10 per cent formalin and Zenker's fluid, and paraffin embedding. The following stains were used: Sudan IV, Verhoeff's elastic stain, hematoxylin and eosin, Heidenhain's aniline blue stain and Mayer's stain for amyloid.

The following table summarizes the data according to species:

No. Cases	*Species*	*Cases Glomerular Nephritis*	*Per Cent*
41	Equine	1	2.44
160	Bovine	3	1.87
8	Ovine	1	12.5
5	Porcine	0	00.0
22	Canine	2	9.9
236		7	2.9

Grossly these cases closely resembled those described in man. In the seven cases studied, the pathology of the renal corpuscles was usually characterized by thickening of Bowman's capsule with rings of connective tissue and some hyalinization.

The glomerular tuft in the more acute stages showed some increase of cells, but never as abundant as that described in man. Injury to the capillaries was revealed by the accumulation of albumin, fibrin and occasionally red blood cells in the subcapsular space. As the disease progressed, there appeared to be thickening of the connective tissue of the tuft. As the circulation became impaired, proliferation of fibroblasts occurred, followed by fibrosis and hyalinization. The renal corpuscles gradually atrophied until they appeared as hyalinized balls. In none of the cases have the epithelial crescents described in man been seen.

Gradual reduction of the flow of blood to the glomerular capillaries produced an ischemia of the tubular structures leading to atrophy and replacement of the normal structures by connective tissue. The tubules often showed cloudy swelling, hydropic degeneration, fatty degeneration, distention of the tubules and necrosis. Many casts were sometimes observed.

ILLUSTRATIVE CASES

Case 1.—Diagnosis: Subacute glomerulonephritis and subacute, suppurative hepatitis.

This animal, an aged Holstein cow, had displayed a fickle appetite and general lassitude for three weeks, later developing posterior weakness and gradual paralysis. A few hours before death there was slight dyspnea, but the temperature was normal. Death came suddenly.

Autopsy findings: The axillary and supramammary lymph nodes were markedly congested and edematous. The mediastinal and bronchial nodes were two or three times the normal size. The pleura showed some adhesions between the parietal and visceral layers. Both the right lung and diaphragm had an old, walled-off, fistulous tract that contained a sharp piece of wire. There also were numerous small abscesses in the right lung measuring from ¼ in. to 1 in. in diameter. The reticulum had a healed area that previously was continuous with the fistulous tract. The liver showed a subacute, suppurative hepatitis. The kidneys were double their normal size. The capsules stripped off easily, revealing indistinct lobulation. The cortex showed small areas of congestion and light-yellowish, raised areas. On section a clear adhesive fluid exuded from the cut surface. Throughout the cortex there appeared light-yellowish to brown streaks which were more marked and more numerous in its depth. The medulla appeared edematous.

Histologic examination disclosed marked involvement of nearly all of the renal corpuscles.

(*Continued on page* 475)

*Journal article No. 523, new series, Michigan Agricultural Experiment Station; contribution from the Animal Pathology Section.

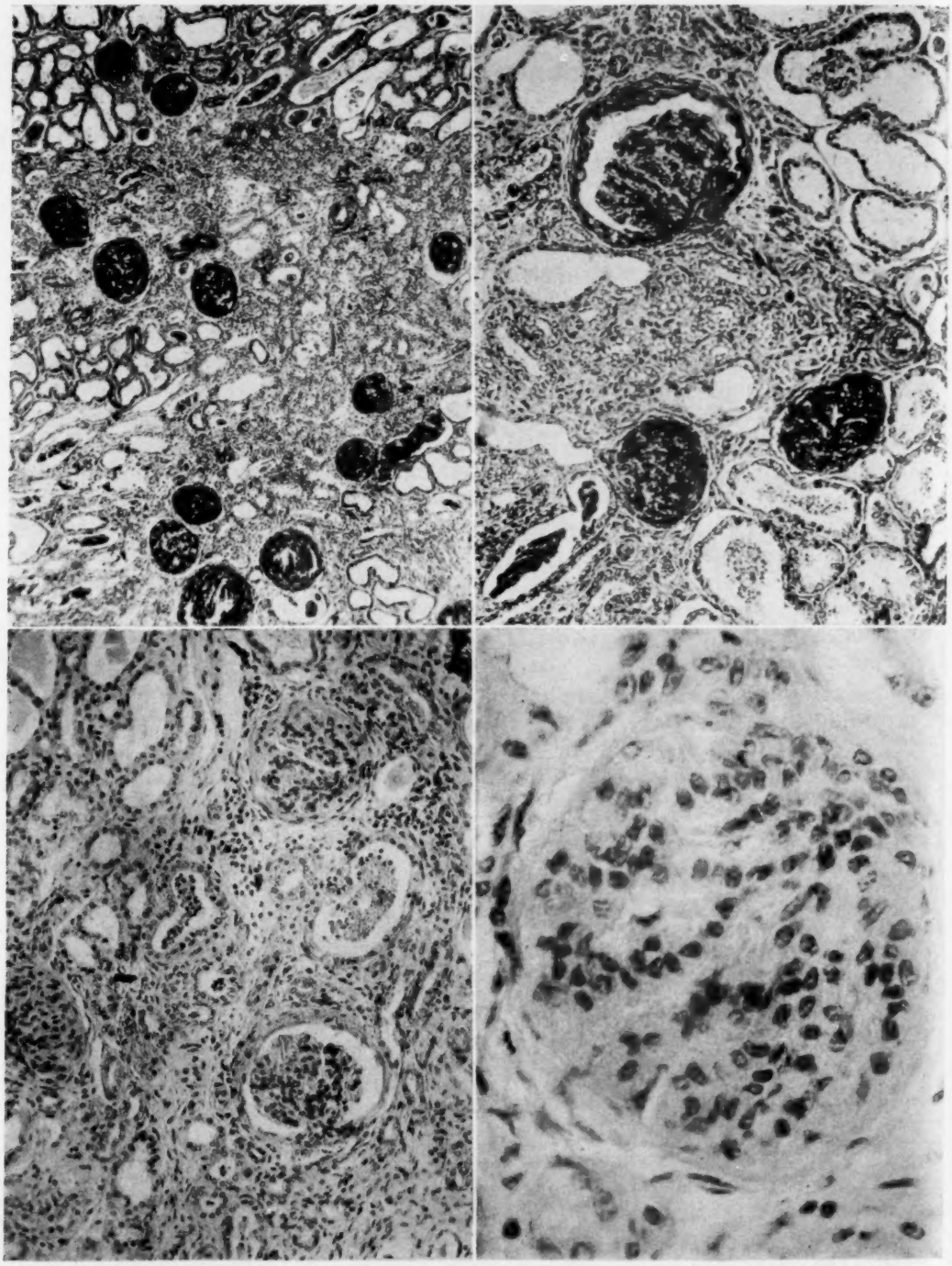


Fig. 1 (upper left): Hyalinized renal corpuscles, and degeneration and atrophy of tubules (aniline blue stain; x 68). Fig. 2 (upper right): Thickening of basement membrane of Bowman's capsule and part of the glomerular tuft. Note the fatty degeneration of some of the tubules and distention of others (aniline blue stain; x 155). Fig 3 (lower left): Partial to almost complete occlusion of the renal corpuscles because of increased amount of connective tissue and hyalinization. Observe thickening of Bowman's capsule with concentric rings of connective tissue and hyalinization. The tubules show various stages of atrophy and gradual replacement with connective tissue (hematoxylin and eosin; x 155). Fig. 4 (lower right): Higher magnification of renal corpuscle, showing lack of patent capillaries due to proliferation of fibroblasts and hyalinization (hematoxylin and eosin; x 700).

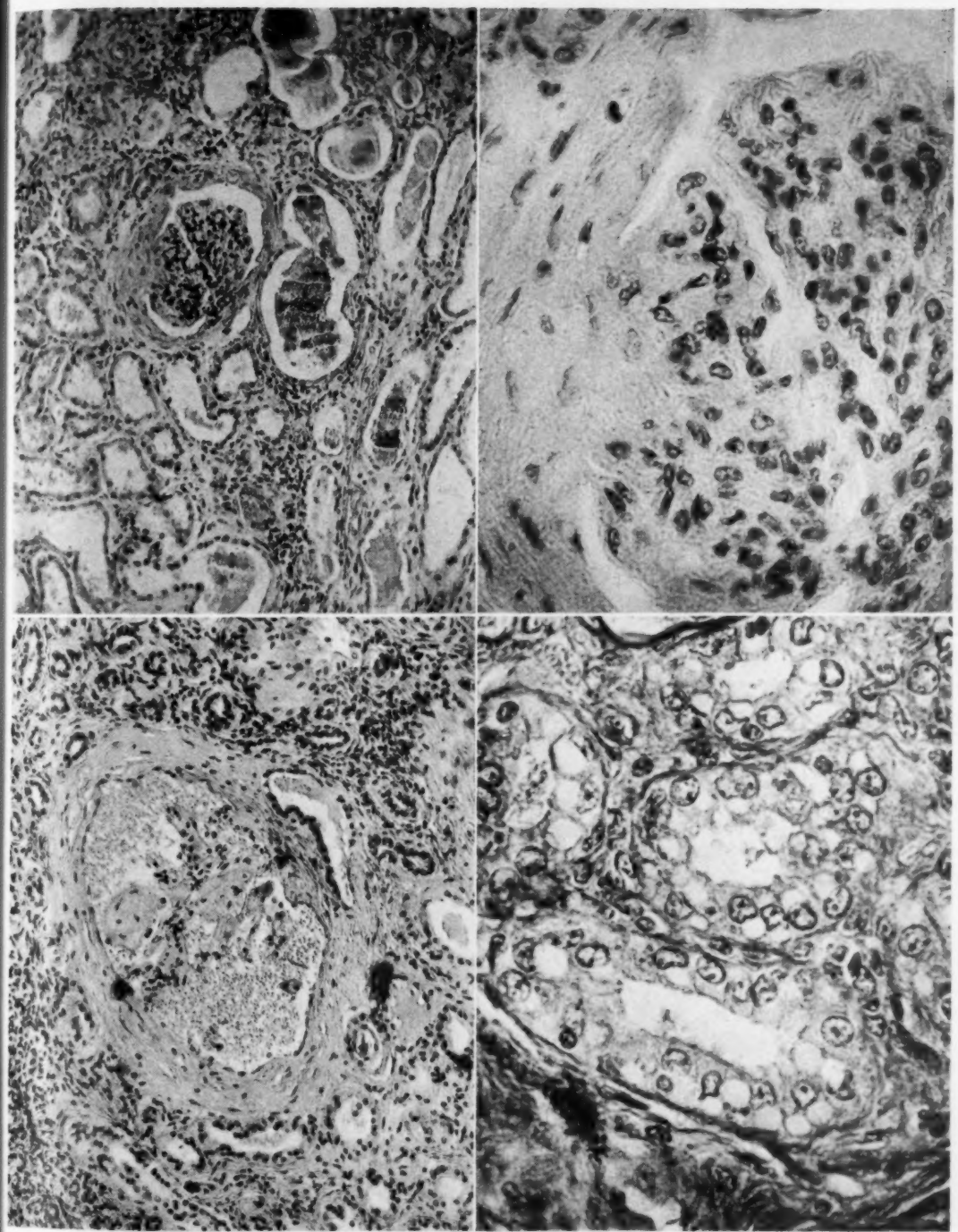


Fig. 5 (upper left): Connective tissue adhesion between Bowman's capsule and the glomerulus. Note the distended tubule containing a cast (hematoxylin and eosin; x 155). Fig. 6 (upper right): Higher magnification of the adhesion illustrated in figure 6 (hematoxylin and eosin; x 700). Fig. 7 (lower left): Distention of Bowman's capsule and atrophy of the glomerular tuft. Bowman's capsule also is thickened with connective tissue (hematoxylin and eosin; x 700). Fig. 8 (lower right): Fatty degeneration of the proximal convoluted tubules (hematoxylin and eosin; x 700).

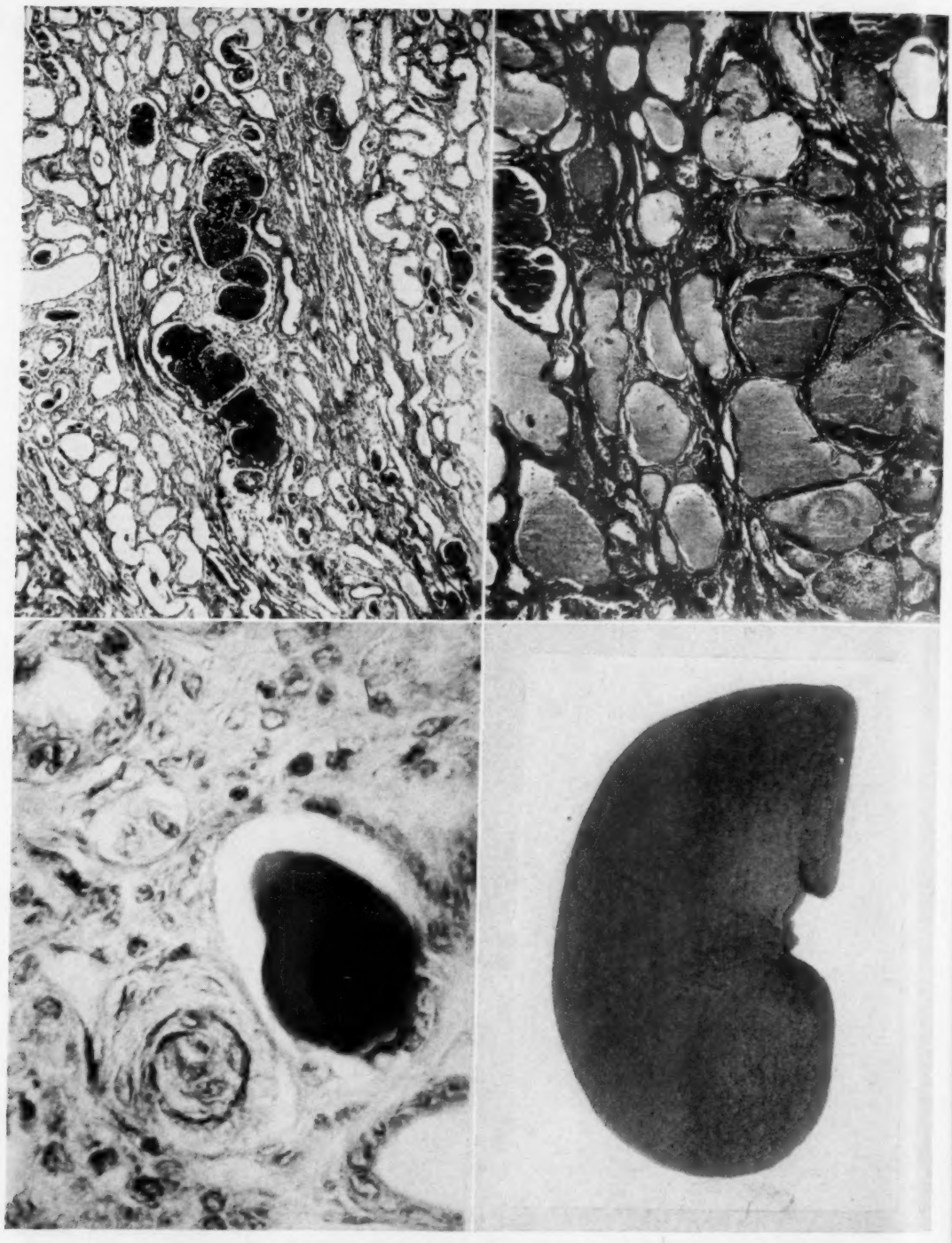


Fig. 9 (upper left): Distended tubules of the medulla (hematoxylin and eosin; x 68). Fig. 10 (upper right): Section through medulla, showing extensive accumulation of fluids leading to distention of the tubules and lowering of the epithelium (aniline blue stain; x 68). Fig. 11 (lower left): Occlusion of a small interlobular arteriole due to connective tissue thickening of the intima (Verhoeff's elastic stain; x 880). Fig. 12 (lower right): Kidney, showing mottled areas resembling small blisters on surface of cortex (natural size).

The lesions were characterized by thickening of Bowman's capsule with connective tissue and hyalinization. The capillaries of the glomeruli were partly to completely occluded, with hyalinization and some connective tissue. In some of the renal corpuscles, showing a few patent capillaries, Bowman's capsules were greatly distended by accumulations of fluids in the subcapsular spaces. Atrophic changes were observed in many tufts of capillaries (fig. 7).

The enormous loss of glomeruli had made the kidney ischemic. The tubules showed cloudy swelling, hydropic degeneration and atrophy, and were gradually disappearing. Simultaneously the atrophic tubules were being replaced with connective tissue. Some of the tubules were hypertrophied, while others were greatly distended with fluids and their epithelium was lowered (fig. 10).

The arciform artery and some of the smaller interlobular arteries showed some thickening of their adventitia and small portions of the media with increased amounts of connective tissue and hyaline. The intimas in some instances were thickened like the media.

Case 2.—Diagnosis: Subacute glomerulonephritis and sinusitis.

History: The animal was a Hampshire ram aged 5 months. For several weeks the animal had been sick and showed marked dyspnea. Clinical examination revealed a severe sinusitis due to *Oestrus ovis* larvae. Euthanasia was performed.

Autopsy findings: The animal had a severe, suppurative sinusitis. The only other apparent lesions were in the kidneys. The capsules stripped easily. The surface of the cortex was mottled due to small, light, raised areas which resembled blisters (fig. 12). On section numerous small, gray streaks extended from the periphery of the cortex toward the medulla. The medulla appeared normal.

Microscopically the most extensive lesions involved the renal corpuscles. Many of them were completely occluded and appeared as shrunken, hyaline balls while others were in a partial state of occlusion (fig. 1). Bowman's capsules in many instances were thickened with connective tissue both outside and inside of their basement membranes. The proliferation of fibroblasts had produced many adhesions between Bowman's capsule and the glomerulus (figs. 5 and 6). The glomeruli showed partial to complete occlusion of the tuft due to thickening of the basement membranes, increased amounts of connective tissue and hyalinization (figs. 2, 3 and 4).

The glomerular lesions had produced an ischemia leading to secondary changes in the kidney structures. Some of the tubules showed cloudy swelling, fatty degeneration, atrophy and disappearance, while others showed hypertrophy (figs. 2, 3 and 8). The cytoplasm of a few proximal convoluted tubules revealed yellow blood pigment. The atrophic tubules gradually were being replaced by connective tissue (fig. 3). The growth of the connective tissue had impinged on some of the tubules causing distention and lowering of their epithelium due to damming up of fluids (fig. 9). In a few of the tubules in both the cortex and medulla were some granular and hyaline casts. In a few small areas in the interstitial tissues there was an accumulation of lymphocytes and macrophages.

The arteries showed some pathologic changes. The intimas of a few of the larger arteries were slightly thickened. Some of the small interlobular and afferent arterioles were partly to completely occluded due to thickening of their intimas (fig. 11).

SUMMARY

1) Two hundred and thirty-six cases of nephritis in domesticated animals have been studied, among which only seven were classified as glomerulonephritis.

2) The pathology of these cases was not identical with that described for man.

3) The primary lesions involved the renal corpuscles and were characterized by thickening of the basement membranes, increased amounts of connective tissue, and hyalinization.

4) The tubules showed secondary changes characterized by cloudy swelling, fatty degeneration, hydropic degeneration, atrophy and gradual replacement as the result of the intensive productive tissue changes.

An undeclared truce may be said to exist between the medical profession and the advocates of state medicine. . . . The government is too busy with more vital matters . . . to be concerned with wholesale readjustment of national medical economics.—*Medical Times, Oct. 1941.*

Rio Grande do Sul, the largest cattle-breeding state of Brazil, is called the Texas of Brazil. Although only one third as large as Texas, it raises twice as many cattle and many hogs and sheep. Grazing lasts throughout the year in its southwestern part. Rio Grande do Sul is one of the headaches of U. S. cattle breeders.

Studies on the Relationship of Brucellosis to Periodic Ophthalmia*

E. L. STUBBS, V.M.D., and W. G. LOVE,† V.M.D.
Philadelphia, Pa.

THE QUEST FOR the cause of periodic ophthalmia has been carried out in many directions, but the cause still is obscure and no satisfactory explanation has been given. Any line of investigation still seems justified in trying to explain the occurrence of this disease. Brucellosis has been shown to occur in a wide variety of species of animals. Focal infection has been associated with eye conditions in man and its relationship to diseases in lower animals is not understood.

Burkey, Thompson and Zepp[1] reported the isolation of Brucella organisms from two mares with periodic ophthalmia. One mare had an agglutination titer of 1:320 (the organism was isolated from the milk) and, *post mortem*, showed cystic ovaries from which the organism was isolated. The other, a blind mare, did not react to the agglutination test, but had cystic ovaries, and Brucella organisms were isolated from the cyst fluid and from the blood. These authors reported that two other mares were positive to the agglutination test, one of which showed an agglutination titer of 1:20 between attacks, and during acute attacks the titer rose to 1:80. These authors believe that Brucella organisms have some part in the cause of periodic ophthalmia.

Forty cases of periodic ophthalmia examined by us have been given agglutination tests for brucellosis. Six of them showed a slight agglutination in low dilutions, which would be classed suspicious on the basis of the test as used in cattle. The others were entirely negative. The table shows these cases and a description of them follows:

REPORT OF CASES

Case 1.—A 9-year-old gelding with a long-standing case of periodic ophthalmia involving the off eye. The agglutination test for brucellosis was negative.

Case 2.—A 5-year-old mare with a long-standing case involving both eyes. The test was negative.

Case 3.—A 15-year-old mare with a long-standing case of periodic ophthalmia involving both eyes. The test was negative.

Case 4.—A 12-year-old mare with a long-standing case involving the left eye. This mare foaled a few days before the test; the foal was normal and no abnormality in the eyes could be found. The agglutination test of the mare was negative.

Case 5.—A 4-year-old mare out of the mare described in case 4 and a full sister of the foal. This mare was foaled by mare No. 4 after she was affected with periodic ophthalmia. Soon after weaning at 8 months, the off eye developed redness, lacrimation and photophobia. After two or three such attacks in the off eye, the near eye also became involved. Our first examination was made at 4 years of age when both eyes were involved. The off eye was enophthalmic and showed an interstitial keratitis. Illumination of the eye reflected a yellowish green glow. The near eye showed capsular cataracts and large, vitreous opacities. The disc barely could be outlined. One month later this mare was donated for study. Almost daily observations were made for a period of six months. Six recurrences were noted in the off eye during this time, all of which occurred after the formation of a complete cataract. The near eye suffered three recurrences during this period with the development of complete complicated cataract and marked retinal detachment. An agglutination test was negative on blood drawn during the height of a recurrence.

The foregoing cases were all on the same farm, on which there was an average population of about 20 horses. Periodic ophthalmia appeared approximately five years previously. During this time two or three cows were kept on the farm, but were not associated with the

---

*From the School of Veterinary Medicine and the School of Animal Pathology, University of Pennsylvania; presented before the Section on General Practice at the seventy-seventh annual meeting of the American Veterinary Medical Association, Washington, D. C., August 26-30, 1940.

This investigation was supported by funds from the Committee for the Investigation of Diseases of the Eyes of Horses, American Thoroughbred Breeders Association, and the School of Animal Pathology.

†Now associated with the Bureau of Animal Industry, U. S. Department of Agriculture, Beltsville, Md.

[1]Am. J. Ophthalmol., xxii (Nov. 1939), pp. 1210-1217.

horses. The status of the cows in regard to brucellosis was unknown.

Case 6.—A 12-year-old Shetland pony mare with the history of recurring eye trouble in the off eye. At the time of examination there was evidence of preëxisting intraocular inflammation in both eyes. The off eye was shrunken and cloudy and the iris was swollen; the near eye showed a polar cataract and a hazy vitreous. This pony was kept in a stable with other ponies and horses, some of which had periodic ophthalmia. Two weeks prior to examination this pony aborted and suffered slightly at the time from some unidentified infection. Blood was drawn and the serum subjected to the test for brucellosis, with entirely negative results.

Case 7.—An 8-year-old Thoroughbred gelding with a history of recurring eye trouble was donated for study. At the time it was received each eye was undergoing an acute attack. During the next five weeks there were three recurrences in the off eye and four recurrences in the near eye. An agglutination test was made on blood obtained while the eyes were undergoing attack, but no reaction to brucellosis was found.

Case 8.—An aged draft mare with a history of recurring eye trouble in one eye and then the other. One examination only was made, which showed both eyes cataractous and shrunken; both eyes had been quiescent for some time. Blood was drawn and on agglutination test showed a plus 4 agglutination in 1:25 dilution and a plus 2 agglutination in 1:50 dilution.

Case 9.—A city horse, a gelding, of draft type, kept with many other horses. Examination showed complicated cataracts in both eyes; the off eye showed an acute iridocyclitis. The blood test for brucellosis was negative.

Case 10.—A horse of draft type kept with many other horses in a city stable; it had been in the same stable for about 1½ years and throughout that time had shown a gray eye which on examination was a cataract. Three weeks prior to examination the near eye showed severe "tearing." Examination disclosed acute intraocular inflammation characteristic of periodic ophthalmia with an interstitial keratitis. The blood test was negative.

Case 11.—A 7-year-old Thoroughbred mare bred and raised by the present owner. The owner stated that three months before examination the off eye had "run" and was sensitive to light. He believed that the eye had been injured, and the condition cleared without treatment. At the time of examination the off eye was "tearing" slightly, was sensitive to light and the blood vessels were engorged. Hypotension was present and it was believed that this was the second day of the second attack. The blood test for brucellosis at this time gave an agglutination of plus 2 in 1:25 dilution and plus 1 in 1:50 dilution.

Case 12.—A 5-year-old Thoroughbred gelding kept on a farm where there were no other livestock except horses. Five months previously the near eye was observed to be "sore." This condition cleared up in about one week, but recurred two months later. Three months later another attack occurred when this horse was donated for study. At this time the near eye showed a partial complicated cataract. Daily observations were made for six weeks when another attack, mild in character, occurred and the horse was sacrificed. The blood examination for brucellosis was negative and no evidence of that disease was found *post mortem*.

Ten cases of periodic ophthalmia were studied in one group of about 80 horses, used mostly for polo and without any possibility of exposure to cows or to brucellosis. These are the following cases, Nos. 13 to 22, inclusive.

Case 13.—A 9-year-old mare, placed in a stall in which the previous occupant developed periodic ophthalmia. Three weeks after being placed in this stall the first eye changes were noticed: redness, lacrimation and photophobia in the near eye. This resulted in capsular cataracts on both the anterior and posterior lens capsules. One month later the near eye showed an iridocyclitis. Mydriatics and nonspecific protein therapy seemed to alleviate the attack. No recurrences followed in one year. This horse was added to this group from an entirely different part of the country where cases of periodic ophthalmia had been reported. For this reason, there is doubt as to whether this was the initial attack and whether the capsular cataracts were not present previously. The blood test for brucellosis was negative.

Case 14.—A 20-year-old gelding, with the first attack in the near eye. Three months later a second attack occurred in the near eye and the off eye also became involved. One month later another attack occurred in both eyes and the horse walked as though it was foundered in the hind feet. One month later another attack followed in the near eye. Blood drawn during this attack was negative to the agglutination test for brucellosis.

Case 15.—An aged mare, with the first attack in the near eye, which cleared up without treatment. Two months later a severe attack occurred in the near eye and there was slight involvement in the off eye. A course of sulfapyridine was given. Two weeks after this treatment the off eye showed an acute attack This attack subsided and two weeks later both eyes showed a recurrence, mild in nature. Three weeks after this the horse was destroyed. *Post mortem* both eyes showed hypotension

with complete complicated cataracts. Blood obtained during an acute attack was negative to the agglutination test for brucellosis.

Case 16.—A 17-year-old gelding of light draft type, the only one in this group not used for polo. The initial attack was severe in both eyes and caused permanent damage to each eye. Seven weeks later there was a mild recurrence in the near eye. The blood test was negative for brucellosis.

Case 17.—A 5-year-old Thoroughbred mare, with the initial attack in the near eye. One month later the off eye became involved. One month after this both eyes suffered attacks. Three months following both eyes were involved in severe attacks. The blood examination was negative.

Case 18.—A 12-year-old gelding with a history of recurring eye trouble jumping from one eye to the other. Examination when the eyes were quiescent showed a complete cataract in the off eye typical of periodic ophthalmia. The pupil responded to light, indicating that the lens transmitted light, but no image of the fundus could be obtained. The near eye appeared normal. The blood examination was negative.

Case 19.—A 10-year-old Thoroughbred mare that had the first attack in the off eye. Three months later the near eye became involved and three days later the off eye showed a recurrence. The blood examination was negative.

Case 20.—A 9-year-old mare known to have been in the stable for four years. The first attack occurred in the near eye. One month later there was a recurrence in this eye. Four months later the near eye again was attacked, with marked intraocular exudates. These were resorbed and the eye appeared almost normal. Three weeks after this attack there was another recurrence. Blood drawn during the active stage was negative for brucellosis.

Case 21.—A 7-year-old Thoroughbred mare, with both eyes involved in what was reported as the first attack. Ophthalmoscopic examination showed changes of a chronic nature which were believed to have existed previous to this attack, but which apparently had not produced external symptoms. Five months later ophthalmoscopic examination showed changes characteristic of periodic ophthalmia. Blood drawn at the time the eyes were active was negative to the agglutination test for brucellosis.

Case 22.—An aged mare, with an initial attack in the near eye. This attack appeared five months after all of the previous cases occurred. No recurrence followed for five months, after which no further observations were made. Blood drawn when the case was active was negative for brucellosis.

Case 23.—A yearling mare colt, in which the first attack was reported involving both eyes. Four months later a second attack affected both eyes. No attacks have occurred since. This horse was kept in a stable with eight other horses and about 20 cows. Blood drawn while the eyes were quiet was negative to the agglutination test for brucellosis.

Case 24.—A 12-year-old Thoroughbred mare showed the initial attack in the off eye. Three weeks later a second attack occurred in the same eye and in two weeks a third attack followed. Blood drawn during this last attack while the eye was active showed a plus 3 reaction in 1:25 dilution while all other dilutions were negative for brucellosis.

Case 25.—A 7-year-old Thoroughbred gelding, with a history of recurring eye trouble that caused the owner to ask for an examination. Ophthalmoscopic examination showed a disturbance in the off eye which was not active at the time of examination. There were aqueous and vitreous exudates with posterior synechia and exudate on the capsule of the lens. The agglutination test for brucellosis was negative.

Case 26.—An 11-year-old Thoroughbred gelding, used for hunting, affected in the near eye. Examination was made while it was active, when it showed hypertension and the early stages of periodic ophthalmia. It recurred, but no opportunity was obtained for another examination until 15 months later, when the same eye showed the later stages of periodic ophthalmia. Two months later a mild recurrence followed. Ten months after this the eye was chronic and it was still a one-eye case. The blood test at this time was negative for brucellosis.

Case 27.—An 8-year-old Thoroughbred gelding, used for hunting, with an acute stage in the off eye at the first examination. This horse was not seen again until 15 months later and no record of recurrences is available. The off eye showed evidence of further inflammation. One year later the off eye was shrunken and had a complete complicated cataract. Blood taken at this time was negative to the agglutination test for brucellosis.

Case 28.—An 8-year-old Thoroughbred gelding, with a history of four attacks of eye trouble, each in the near eye, over a period of eight months. No recurrence was noticed then for six months, when the horse was examined ophthalmoscopically. Only minor changes were found in the anterior segments of the near eye. Blood taken at this time was negative to the agglutination test for brucellosis.

Case 29.—A 6-year-old mare, purchased with a speck in the off eye. Six months later the same eye was described as becoming milky and it ran. Examination three weeks afterward revealed that the off eye was chronic with complete complicated cataract. The near eye showed active inflammation with an incomplete complicated cataract. The blood examination was negative for brucellosis.

Case 30.—A 5-year-old Thoroughbred mare,

bred and raised by the owner. The initial attack occurred in the off eye and two months later the same eye was affected, when the horse could not see other horses in the pasture. An examination made the third day of this second attack showed the near eye damaged permanently with posterior synechia, anterior and posterior cataracts and opacities in the vitreous. The off eye showed acute changes. The blood test was negative for brucellosis.

Case 31.—A 10-year-old Thoroughbred gelding belonging to a hunt club. It was reported as having recurring eye trouble for two years. The first attack was in the off eye. Three months later the same eye was attacked; then, four months later, both eyes were involved with a number of recurrences. Ophthalmoscopic examination disclosed that both eyes were involved with the late stages of periodic ophthalmia. The blood test was negative for brucellosis.

Case 32.—A 12-year-old Thoroughbred gelding belonging to the above hunt club. It began to have trouble at the same time as case 31, first in the off eye, then in both eyes. On examination it was found to be chronically affected. The blood test was negative for brucellosis.

Case 33.—A 1½-year-old gelding. This colt had a history of having been foaled by a mare 3 years old which had an attack of eye trouble when the foal was 2 months old. The mare was sold when the colt was 9 months of age and was blind in the eye that had attacks of eye trouble. The colt showed the first eye trouble when it was 1 year old, which was typical of periodic ophthalmia, in both eyes. One month later there was a recurrence that was more severe in the off eye. One month after this there was a severe attack in the off eye. Four months later both eyes were involved actively. One month following the near eye showed a mild recurrence. Six weeks later, when both eyes showed permanent effects of periodic ophthalmia, blood was taken and tested, but was negative for brucellosis.

Case 34.—A 2-year-old Thoroughbred mare, with a history of injury to the near eye as a weanling. The eye was red, swollen and tearing profusely, but cleared up well. One year later the same eye showed the same symptoms. This attack cleared, but the eye again was affected six months later, and also five months after that. Two months following both eyes were red, swollen and tearing. Blood drawn at this time showed a plus 3 reaction in 1:25 dilution, and a plus 2 reaction in 1:50 dilution. One goat ran with the three horses, the dam and a half brother of this one.

Case 35.—A 3-year-old, draft-type farm gelding, bred and raised by the owner on a farm at about 1,100-ft. elevation. The first attack was in one eye, but which one is not known. Five months later both eyes were attacked severely. At the time of examination both eyes were active. The blood test was negative for brucellosis. This horse was associated with three or four other horses which were kept in the same barn with the cows.

Case 36.—An 11-year-old Thoroughbred gelding. The near eye was attacked first after an attack of forage poisoning, and shortly after the injection of one dose of chick-embryo vaccine for equine encephalomyelitis. At time of examination six weeks later the off eye showed active symptoms of periodic ophthalmia. The blood test at this time was negative for brucellosis.

Case 37.—A 4-year-old farm mare. This mare had an attack one month previously, diagnosed by the attending veterinarian as periodic ophthalmia, involving both eyes. At the time of examination both eyes were quiet. The blood test showed a plus 2 reaction in 1:25 dilution.

Case 38.—A 6-year-old farm mare, with the initial attack in the near eye ten months previously. The attack cleared and the eye was quiet until the time of examination, when there was a severe recurrence in the same eye. The blood test was negative for brucellosis.

Case 39.—A 6-year-old farm mare, with the initial attack in the near eye, with two to three recurrences within two to three months. The eye cleared, as described by the attending veterinarian. The fourth attack was present at the time of examination, and was very severe in the same eye, the near eye. The blood test for brucellosis was negative.

The last three of the above cases all were on the same farm—bred and raised on the farm. Numbers 37 and 38 are full sisters and No. 39 is a half sister, all being from the same stallion. Two full brothers of Nos. 37 and 38, 2 and 3 years old, are normal. The barn is a bank barn, dark, damp and dirty, on low ground. The horses were in good condition. Four cows and six heifers are on the same premises and have not been tested for brucellosis.

Case 40.—A 2-year-old Thoroughbred mare suffered the initial attack in the near eye at 6 months of age while still suckling. Six months later a recurrence followed, and again in two months in the same eye. Six months after this both eyes showed acute symptoms and two months later a second bilateral attack occurred. At this time the ophthalmoscopic examination was characteristic of periodic ophthalmia, and a blood sample was taken. A plus 3 reaction was obtained in a 1:25 dilution and a plus 2 in a 1:50 dilution.

DISCUSSION

The tests for brucellosis were made after the manner in which the test is used in routine testing of cattle. The tube test

TABLE I—Results of Agglutination Tests for Brucellosis in 40 Cases of Periodic Ophthalmia

CASE NO.	SEX	AGE (YEARS)	UNILATERAL	BILATERAL	STAGE	ACTIVE	INACTIVE	RESULT
1	Gelding	9	+ (off)		Late		+	—
2	Mare	5		+	Late		+	—
3	Mare	15		+	Late		+	—
4	Mare	12	+ (near)		Late		+	—
5	Mare	4		+	Late	+		—
6	Mare	12		+	Late		+	—
7	Gelding	8		+	Intermed.		+	—
8	Mare	Aged		+	Late		+	1:25 + 4 1:50 + 2
9	Gelding	Aged		+	Late	+		—
10	Gelding	Aged		+	Late	+		—
11	Mare	7	+ (off)		Early	+		1:25 + 2 1:50 + 1
12	Gelding	5	+ (near)		Intermed.		+	—
13	Mare	9		+	Intermed.	+		—
14	Gelding	20		+	Intermed.	+		—
15	Mare	Aged		+	Intermed.	+		—
16	Gelding	17		+	Intermed.		+	—
17	Mare	5		+	Early	+		—
18	Gelding	12		+	Intermed.		+	—
19	Mare	10		+	Early	+		—
20	Mare	9	+ (near)		Early	+		—
21	Mare	7		+	Intermed.	+		—
22	Mare	Aged	+ (near)		Early	+		—
23	Mare	1		+	Early		+	—
24	Mare	12	+ (off)		Early	+		1:25 + 3
25	Gelding	7	+ (off)		Late		+	—
26	Gelding	11	+ (near)		Late		+	—
27	Gelding	8	+ (off)		Late		+	—
28	Gelding	8	+ (near)		Intermed.		+	—
29	Mare	6		+	Late		+	—
30	Mare	5		+	Late		+	—
31	Gelding	10		+	Late		+	—
32	Gelding	12		+	Late		+	—
33	Gelding	1½		+	Late		+	—
34	Mare	2		+	Intermed.		+	1:25 + 3 1:50 + 2
35	Gelding	3		+	Intermed.	+		—
36	Gelding	11		+	Early	+		—
37	Mare	4		+	Early		+	1:25 + 2
38	Mare	6	+ (near)		Early	+		—
39	Mare	6	+ (near)		Early	+		—
40	Mare	2		+	Early	+		1:25 + 3 1:50 + 2

was used with four dilutions, 1:25, 1:50, 1:100 and 1:200. As will be noted in the description and in the table, all tests were negative in all dilutions except six. These six gave agglutination reactions from 1:25, plus 2, to 1:50, plus 2, with only one reaction showing complete agglutination, which was 1:25, plus 4. These all would be considered suspicious reactions interpreted according to the basis for reading such tests in cattle. All six were mares. Their ages varied from 2 years to aged, as follows: 2, 2, 4, 7, 12 and aged, respectively. Twenty-three of the 40 were mares and 17 were geldings. Thirteen of the 40 were one-eye cases, of which five were in the off eye and eight were in the near eye. Twenty-seven were cases involving both eyes. Eighteen were in the active stage when tested, while 22 were inactive at the time of test. The six that showed some agglutination comprised three cases that were active and three that were inactive.

Agglutination in reactions as low as these, and considered by us as slightly suspicious reactions, have very little significance as pointing to any relationship between brucellosis and periodic ophthalmia.

Immunization Against Cecal Coccidiosis in Chickens by the Use of X-Ray-Attenuated Oöcysts*

S. H. WAXLER, Ph.D.
Madison, Wis.

RESISTANCE AND IMMUNITY to coccidiosis have been studied by various workers in an attempt to control or ameliorate the effects of this disease. Several investigators have suggested the use of graduated doses of oöcysts in order to establish resistance to a subsequent heavy reinfection. Beach and Corl[1] reported that chicks surviving a severe infection acquired a definite tolerance to a fatal dose given later. Johnson[2] fed small doses of oöcysts in the ration daily for 15 days and thus developed a distinct protection against heavy reinfection. Tyzzer[3] found that light single doses followed by a huge dose of oöcysts conferred complete immunity.

The use of attenuated oöcysts has been tried. Jankiewicz and Scofield[4] stated that heat-treated oöcysts given in three separate doses at five-day intervals conferred either a resistance to heavy reinfection or total immunity. Fish[5] studied the effect of ultraviolet rays on segmented and unsegmented oöcysts, but did not undertake immunity experiments. Albanese and Smetana[6] used x-ray as a means of attenuating oöcysts, but they did not carry out tests on the protection given by their treated oöcysts.

It is apparent that the use of graded or repeated doses, owing to the necessity of repeated handling, limits the practicability of these procedures. An experiment was, therefore, undertaken to determine the amount of protection afforded chicks which had been infected with a single dose of oöcysts attenuated with x-rays.

MATERIALS AND METHODS

A more delicate method than that commonly used was employed to determine the severity of the disease. The extent of the coccidial infection is usually judged by the mortality, the lesions of the ceca or the debilitating effect. None of these criteria can measure adequately the intermediate degrees of severity nor distinguish the slight variations. This disease, caused by *Eimeria tenella*, is characterized by hemorrhage. Inasmuch as unpublished data indicate that with an increase in the severity of the infection there was a progressive decrease in hemoglobin, the hemoglobin content of the blood was selected as the means to that end. Hemoglobin determinations were made before and seven days after the experimental infection. The blood samples were drawn from the leg vein and their hemoglobin values were determined by the procedure of Schultze.[7] A standardized

*From the Department of Zoölogy and the Department of Veterinary Science, University of Wisconsin. Assistance was received from the personnel of the Works Projects Administration, official project No. 65-1-53-2349.

[1]Beach, J. R., and Corl, J. C.: Studies in the control of avian coccidiosis. Poultry Sci., iv (1925), p. 82.

[2]Johnson, W. T.: Immunity to coccidiosis in chickens produced by inoculation through the ration. Abst., J. Parasitol., xix (1932), p. 160.

[3]Tyzzer, E. E., Theiller, H., and Jones, E. E.: Coccidiosis in gallinaceous birds. Am. J. Hyg., xv (1932), p. 319.

[4]Jankiewicz, H. A., and Scofield, R. H.: The administration of heated oöcysts of *Eimeria tenella* as a means of establishing resistance and immunity to cecal coccidiosis. J.A.V.M.A., lxxxiv (March 1934), p. 507.

(*Continued from preceding page*)

It was possible in this study to compare only clinical findings, including ophthalmoscopic examinations, with the agglutination tests.

CONCLUSION

The results obtained from this study in 40 cases of periodic ophthalmia do not indicate any relationship between brucellosis and periodic ophthalmia.

[5]Fish, F. F.: Some factors in the control of coccidiosis in poultry. J.A.V.M.A., lxxx (April 1932), p. 543.

[6]Albanese, A. A., and Smetana, H.: Studies on the effects of x-rays on the pathogenicity of *Eimeria tenella*. Am. J. Hyg., xxvi (1937), p. 27.

[7]Schultze, M. O., and Elvehjem, C. A.: An improved method for the determination of hemoglobin in chicken blood. J. Biol. Chem., cv (1934), p. 253.

Evelyn electric colorimeter was used to read the hemoglobin content directly.

The chickens used were Single Comb White Leghorns furnished by the Department of Poultry Husbandry of the University of Wisconsin. They were obtained immediately after hatching, kept free of infection and given the feed and care described by Herrick, Ott and Holmes.[8]

The birds were infected orally with about 1 cc. of a pure culture of *E. tenella* containing approximately 200,000 viable oöcysts. These were sporulated and kept in culture with 2.5 per cent solution of potassium dichromate. The suspension of oöcysts was divided into two portions: One portion was attenuated by varying amounts of radiation; the other portion was kept in an untreated state.

The oöcysts were x-rayed by a General Electric machine, standardized to give 450 roentgen units per minute at a distance of 10 cm. At this distance the rays are distributed over an area 10 cm. in diameter. Inasmuch as the diameter of a 10-cm. Petri dish is the same as the opening of the cone of the x-ray machine, the dish was placed directly under this opening to insure equal radiation throughout the culture. A constant volume of parasites, namely 20 cc., was treated at one time.

EXPERIMENTS

Part I.—To determine the amount of radiation necessary to attenuate the oöcysts sufficiently to make them sublethal, an experiment was set up to x-ray them with varying amounts of roentgen units. Twenty chicks, 5 weeks of age, were divided equally into four groups. Three groups were infected with oöcysts which had been exposed to x-rays of 4,500, 9,000 and 13,500 roentgen units respectively, and the fourth group was infected with untreated oöcysts. Hemoglobin determinations were made at the time of infection and seven days later.

The data in table I show that hemoglobin of the chicks infected with oöcysts radiated with 13,500 r-units dropped from 7.78 to 6.24 Gm. per 100 cc. of blood. In those given the oöcysts attenuated with 9,000 r-units the decrease was from 8.08 to 5.56 Gm. The third group, fed oöcysts radiated with 4,500 r-units, showed a hemoglobin drop from 8.18 to 3.05 Gm. The average

TABLE I—Effects of Radiation on Coccidia Oöcysts

Bird No.	Dose in r-Units	Hemoglobin Gm./100 cc.		Change
		Before	After	
1	13,500	7.4	7.1	0.3
2	13,500	8.6	5.8	2.8
3	13,500	7.4	6.6	0.8
4	13,500	7.4	6.1	1.3
5	13,500	8.1	5.6	2.5
	Average	7.78	6.24	1.54
1	9,000	7.9	6.2	1.7
2	9,000	8.9	5.7	3.2
3	9,000	7.2	4.2	3.0
4	9,000	7.9	4.8	3.1
5	9,000	8.5	6.9	1.6
	Average	8.08	5.56	2.52
1	4,500	7.5	4.5	3.0
2	4,500	7.8	2.3	5.5
3	4,500	8.3	2.9	5.4
4	4,500	9.5	2.0	7.5
5	4,500	7.8	3.7	4.1
	Average	8.18	3.08	5.1
1	Control	8.1	Dead	——
2	Control	8.6	3.2	5.4
3	Control	8.5	Dead	——
4	Control	8.1	4.6	3.5
5	Control	8.3	5.2	3.1
	Average	8.33	4.33	4.0

hemoglobin drops in the three groups were as follows: 1.54, 2.52, and 5.1 Gm. respectively. The control group infected with untreated oöcysts suffered a 40 per cent mortality and an average hemoglobin drop of 4 Gm. (8.33 to 4.33 Gm.).

There was a progressive attenuation of the oöcysts as the amount of radiation was increased. As the attenuation was increased, the severity of the disease decreased, as shown by the hemoglobin content.

It was then desired to learn whether oöcysts exposed to 9,000 r-units would be safe for chickens younger than 5 weeks—the age of the chicks used in the first experiment. In this phase of the work two groups of chicks were used. One group was 5 and the other 24 days old. As an indication of the virulence of the attenuated oöcysts, the mortality of the birds was noted from the fifth to the tenth day after the infection. Data from table II show that in the 24-day-old chicks, 3 of the 61 birds infected with attenuated oöcysts died. The control group, infected with untreated oöcysts, showed a mortality of 46.8 per cent; 29 out of the 62 chicks died. This in-

[8]Herrick, C. A., Ott, G. L., and Holmes, C. E.: The chicken as a carrier of the oöcysts of the coccidia *Eimeria tenella*. Poultry Sci., xv (1936), p. 323.

dicated that younger birds should be given oöcysts radiated slightly longer.

This hypothesis was tested on 5-day-old chicks. They were divided into three groups, two of which were exposed to 9,000 and 13,500 r-units, respectively. The other group was given the untreated oöcysts. In the latter (control group), 19 out of the 30 infected birds died. There were no losses in the chicks infected with the oöcysts attenuated with 13,500 r-units. In the group given the treated oöcysts (9,000 r-units) one out of 27 chicks died.

In standardizing the dosage, the question arose as to whether the time interval between the irradiating and the feeding of the oöcysts to the chicks was important. In this regard, in preliminary experiments, it was found that within a period of six weeks, the attenuation of the oöcysts as measured by mortality and hemoglobin drop did not change.

TABLE II—Effect of X-Rayed and Control Oöcysts on Chickens of Different Ages

Age Days	Exposure r-Units	No. Infected	Mortality	%
5	9,000	27	1	3.7
5	13,500	28	0	0
5	Control	30	19	63.3
24	9,000	61	3	4.9
24	Control	62	29	46.8
35	9,000	23	0	0
35	Control	12	6	50.0

Part II.—The primary purpose of this part of the experiment was to learn whether or not the chickens which had been infected with an attenuated sublethal dose of oöcysts could resist a subsequent infection as well as the survivors of a severe infection caused by untreated oöcysts. A number of chickens, 5 weeks of age, were divided into groups. One group was infected with x-ray-attenuated and the other with untreated oöcysts. The hemoglobin values of both groups were determined at the time of infection and again on the seventh day.

The data in table III indicate that at the initial infection the group which was infected with untreated oöcysts suffered a mortality of 50 per cent and the hemoglobin of the survivors dropped from 7.7 to 4.1 Gm. per 100 cc. of blood, a decrease of 3.6

TABLE III—Relative Resistance of Chickens Following Infection with X-Ray-Attenuated and Untreated Cöcysts

Bird No.	Control Oöcysts			
	First Infection		Second Infection	
	Hb.* Before	Hb.* After	Hb.* Before	Hb.* After
1	6.4	Died		
2	7.3	Died		
3	7.3	3.4	7.2	7.5
4	7.4	Died		
5	8.3	5.2	8.4	6.4
6	8.1	4.3	8.7	6.8
7	7.9	Died		
8	9.1	Died		
9	7.6	2.6	7.8	7.7
10	8.1	3.4	Killed†	
11	7.9	Died		
12	7.4	3.2	7.1	7.4
Avg.	7.7	4.1	7.8	7.2
9,000 r-Units X-Rayed				
1	8.9	5.7	8.3	6.6
2	8.4	5.4	7.7	5.5
3	8.2	6.5	7.1	6.5
4	8.3	6.3	Killed†	
5	7.7	4.6	8.1	6.4
6	8.0	5.6	Killed†	
7	8.3	5.1	Killed†	
8	8.1	6.3	8.7	6.8
9	7.6	4.8	8.3	7.4
10	6.9	5.2	7.4	6.4
11	8.1	6.3	Killed†	
12	7.9	4.8	8.0	5.9
13	6.6	5.3	8.6	5.7
14	7.9	4.3	7.7	7.1
15	8.3	4.8	7.5	4.2
16	8.0	4.7	8.2	6.3
17	8.7	6.1	7.5	5.6
18	7.4	5.6	7.3	7.9
19	7.5	5.5	7.8	5.5
20	6.9	4.4	7.9	4.7
21	7.6	5.4	7.4	6.6
22	7.5	4.6	7.3	5.2
23	7.3	3.5	7.7	5.3
Avg.	7.8	5.3	7.8	6.1
Controls (Kept in Separate Cage)				
1			8.3	5.2
2			7.0	Died
3			8.6	3.3
4			8.3	5.2
5			7.1	5.6
6			7.7	3.6
Avg.			8.0	4.5
Controls (Kept in Cage with Infected Chicks)				
1			7.5	4.4
2			8.9	4.9
3			8.7	6.2
4			8.3	4.0
5			8.5	4.5
6			9.0	5.2
7			7.1	5.0
8			7.9	Died
9			7.7	5.6
10			7.1	Died
11			8.1	4.7
12			7.3	4.2
13			10.1	3.7
Avg.			8.2	4.7

*Expressed in grams per 100 cc.

†Killed because of cannibalism and injury.

Gm. The group of 23 birds which had been infected with x-ray-attenuated oöcysts had no deaths and the hemoglobin decreased from 7.8 to 5.3, or 2.5 Gm. per 100 cc. of blood. This indicated that the treated chicks did not suffer as much from mortality and hemorrhage as the normally infected group.

A period of five weeks was then allowed to elapse between the first and second infection. At this time the two groups of chicks plus two uninfected control groups were given a dose of the same untreated oöcysts as were used in the first infection. One group of controls was kept in the same cage for five weeks as an indication of contaminating infection. The second set of controls was used as a criterion for the potency of the oöcysts, as a check on the other controls and as a standard by which to judge the primary infected birds.

The data in table III show that the survivors of the group which was previously infected with untreated oöcysts had no deaths and a slight drop of 0.6 Gm. in the hemoglobin (from 7.8 to 7.2). The group which had been infected with the attenuated oöcysts at the initial infection also had no deaths and the hemoglobin dropped from 7.8 to 6.1 Gm. per 100 cc. of blood. The controls kept in a cage separate from these birds lost one out of the six which were infected, and the hemoglobin decreased from 8.0 to 4.5. Of the second set of controls which were kept in the same cage with the infected birds, 2 out of 13 died. The hemoglobin in these birds was reduced from 8.2 to 4.7 Gm.

It thus appears that these birds which had been initially infected with x-ray-attenuated oöcysts suffered only slightly, as indicated by the hemoglobin decrease. They were almost as refractory to the subsequent infection as the survivors of an infection which had caused a mortality of 50 per cent. The mortality and the hemoglobin drop of the controls gave the normal picture of coccidiosis.

DISCUSSION

It is apparent that chicks which have been infected with x-ray-attenuated oöcysts acquire a certain amount of resistance to a second heavy infection. The resistance, when measured by the hemoglobin drop, is almost as great as that afforded the survivors infected originally with untreated cultures. However, this group suffered a 50 per cent mortality at the initial infection whereas no birds of the treated group died. From this it would appear that the use of the attenuated oöcysts not only gives protection against reinfection, but also that these cultures are safe for the initial infection. It was necessary, however, to standardize the dose in roentgen units for the different age groups. The younger chicks required oöcysts attenuated for a slightly longer time than the older ones.

By varying the amount of radiation it was possible to control the severity of the disease with fair accuracy. The longer the cultures were subjected to the rays, the less severe was the disease. The use of the x-ray as the attenuating agent appears to be satisfactory, since the results obtained, as indicated by hemoglobin drop, can be duplicated by using the same quantity of roentgen units.

The word "attenuation" as used in this paper refers to the irradiated oöcysts, the virulence of which was less than that of the untreated controls. The word, as used in bacteriology, usually conveys the loss of virulence due to the action of some biological, physical or chemical agent. Whether a similar factor renders the coccidia nonfatal or whether the resistance is due to reducing the size of the infective dose by killing some of the parasites is not known. The former explanation, of a partial loss of virulence throughout the entire culture, appears to be the most logical.

Although Albanese and Smetena did not use the word "attenuation," they stated that irradiation produces some effect other than simple reduction of the infective dose. The results of this study seem to bear out their contention, for, in view of the fact that we used ten times as many oöcysts in the infecting dose, approximately the same

amount of irradiation made both cultures nonfatal.

SUMMARY

1) In cecal coccidiosis there was a progressive decrease in the hemoglobin content of the blood with an increase in the severity.

2) As the amount of x-ray exposure was increased, there was a progressive attenuation of coccidial oöcysts.

3) As the attenuation was increased, the severity of the disease from the treated cultures was decreased as indicated by the hemoglobin content.

4) The attenuation of oöcysts by exposure to x-rays did not change within a period of six weeks.

5) Chicks infected with a standardized x-ray-attenuated dose resisted a subsequent heavy reinfection almost as well as the survivors of a severe infection produced by untreated cultures.

The Future of Pharmacology*

In 1929, Professor Dixon, president of the British medical association, declared that pharmacology is the most neglected branch of medicine. To find the reason for this neglect the author attempts to review the progress made in the teaching of that study. The main development has been in the scope and intensity of the search for new remedies among synthetic compounds, requiring the coöperation of chemists, bacteriologists, pharmacologists and the colleges. The latter will be hampered unless given the status of a separate discipline with proper staff and accommodations. Otherwise, new remedies will come from the commercial laboratories devoted mainly to specialized pharmacology.

Up to 1870, when the uses of plants and inorganic compounds were based upon tradition and empiricism, pharmacologists concerned themselves with the action of the drugs which empiricism had introduced. There were serious doubts as to whether some of them produced any effect at all. The connection of chemical constitution and physiologic action (1860-1870) marked the dawn of a new day in establishing chemical and physical bases for pharmacology and led to the synthesizing of new compounds. While the galenicals and inorganic drugs have decreased in number in the codexes, synthetic remedies have increased. Although pharmacology still concerns itself with research into the action of the old remedies, it is mainly occupied in the discovery of new artificial compounds; hence the close relationship between pharmacology, physiology, bacteriology and synthetic chemistry. But this sort of progress requires research workers of the higher order and ample equipment and finance.

ACADEMIC LABORATORIES NOT THERAPEUTIC-MINDED

Commercial laboratories have come into the field and they will probably be permanent and affect the future of the academic laboratories. Drug firms previously engaged in the production of active principles and galenicals are now producing synthetic compounds. Academic laboratories not having done their duty, drug firms set up laboratories of their own. This occurred in Germany, Switzerland, United States and Britain. Their facilities equal or excel those of the universities, and inasmuch as they can specialize and produce in volume, they have great advantages over the academic groups. The danger lies in the latter becoming more and more physiologic and less concerned in therapeutics.

The aim of medicine is to prevent and cure disease. The value of chemical agents has had many ups and downs, but at no time in the history of medicine has that value been higher than since physiology, bacteriology, chemistry and pharmacology began to work coöperatively, and the scope of the latter, in teaching and research, was properly apprised in the medical schools.

*Gunn, J. A.: The future of pharmacology. Proc. Roy. Soc. Med., xxxiv (June 1941), pp. 469-478.

Private First Class Stanley Stewart, Medical Corps, U.S. Army, is credited with having discovered that the scarcity of toads in recent times is caused by deaths from coccidiosis. The organism was classified at Johns Hopkins University.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Laryngeal Paralysis in a Dog and Its Surgical Treatment

THEODORE ALLEN, D.V.M.
West Hempstead, N. Y.

THE SUBJECT WAS a mongrel Spitz, male, 9 years of age. The dog was first examined on September 15, 1941, for aphonia. There were no other discernible symptoms. Chronic laryngitis and paralysis of the vocal cords was the diagnosis. One month later the dog was again brought to my attention for a condition that started four days previously. The animal presented an intense inspiratory dyspnea with associated loud laryngeal stridor. After two days of hospitalization the condition became so aggravated that the dog continually gasped with open mouth.

A diagnosis of laryngeal paralysis was based on the history of loss of voice and the subsequent inspiratory stenosis. The condition was considered identical to that seen in horses, known as "roaring." Knowledge as to the latter aided in the diagnosis and treatment.

In horses chronic inspiratory laryngeal dyspnea is almost pathognomonic in "roarers." In the normal animal, the laryngeal muscles dilate the glottis on inspiration by moving the vocal processes of the arytenoid cartilages and vocal cords laterally, obliterating the lateral ventricles and allowing air to stream in unimpeded. In paralysis laryngis this function is lost. The flaccid state

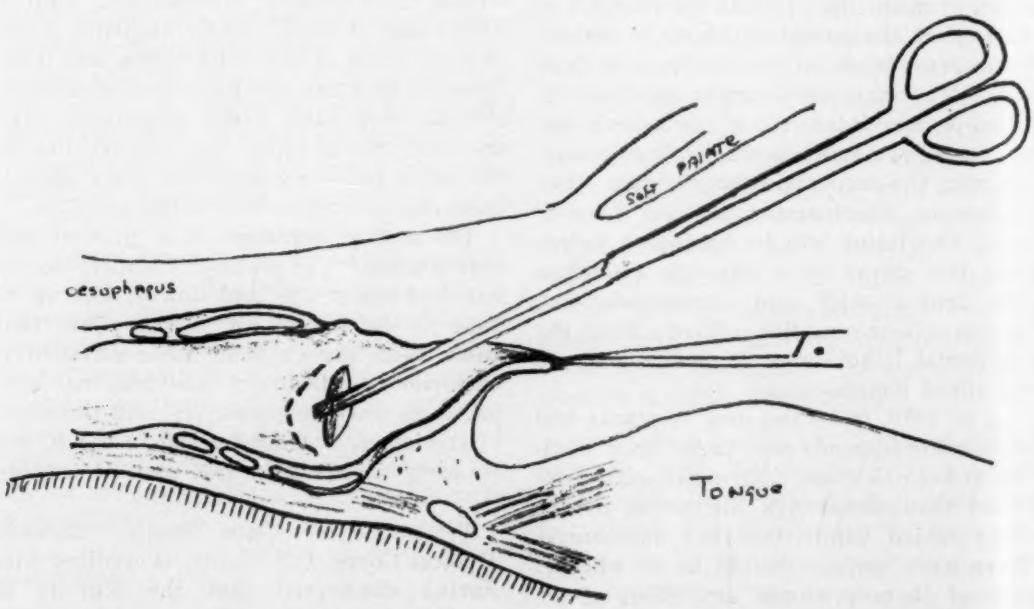


Fig. 1. Section of larynx, showing the left vocal cord being held by forceps. Broken line represents extent of excision of vocal cord.

of the vocal cords impedes the air current. The inspired air actually causes the glottis to close and the laryngeal ventricles to dilate. In the roaring operation removal of the ventricular sacs causes the arytenoid cartilages to adhere to the thyroid cartilages in the subsequent healing. In the dog under discussion it was deemed advisable, mainly to get immediate results, to excise as much of the vocal cords, ventricles and adjacent tissue as possible, thereby relieving the stenosis. Essentially a radical debarking operation was performed as follows:

Deep anesthesia was given (morphine and nembutal). The tongue was drawn forward and the epiglottis was held down with forceps. The free edge of each vocal cord was grasped with a rat-tooth forceps and a liberal excision of each was made with a long pair of tonsillar scissors that are curved near the tip. Hemorrhage was controlled with absorbent cotton and adrenalin 1:1,000. (See figure 1.)

The following day the animal had completely recovered. The inspiratory dyspnea was absent and normal breathing was performed with a closed mouth.

Kirk in "Index of Diagnosis" states that paralyzed vocal cords are rare in dogs and makes no mention of anything similar to this case. Nothing was found on this subject in the literature. Two physicians consulted stated that while paralysis of the vocal cords occurs in people, they could not recall any case where it was associated with laryngeal stenosis.

The etiology of roaring in horses is usually degeneration of the left recurrent laryngeal nerve due to pressure or the effect of toxins. In the present case, however, the fact that the patient had been suffering from severe constipation for many years seemed pertinent. The dog almost always strained considerably to defecate. Since defecation is closely associated with contraction of the glottis, it was conjectured that the constant straining injured the muscles controlling the glottis and caused paralysis.

When examined ten days after the operation, the animal was normal.

Glass Eye in a Polo Pony*

Col. Elwood L. Nye, V.C., U. S. Army, says: "In 1919, at Schofield Barracks, Hawaii, Lieut Col. James R. Sperry (then Lieutenant) and I fitted a glass eye to a polo pony with satisfactory results. The animal was under my observation for about a year and played good polo during that time, or as good as one could expect from a horse with one eye. Frequent cleanings were necessary at first, but later these were infrequent and the results in general were gratifying."

*Written in reply to the article entitled "The Artificial Eye Hokum," J.A.V.M.A., xcix (Oct. 1941), p. 288.

The Use of Sulfanilamide in Minor and Major Surgery*

For both curative and preventive purposes, sulfanilamide has multiple uses in surgery. For the less serious injuries requiring closure, the powder is dusted into the raw tissues and the wound sutured without drainage. For graver injuries the drug is given by the mouth in addition.

Sulfanilamide crystals and hydrous wool fat, equal parts, is a useful ointment for surface treatment of local infections. In compound fractures as much as 20 Gm. may be packed into the traumatic cavity after *debriment* and repositioning. Here, too, the wound is closed without drainage and the usual retention bandage applied. For open wounds and abscesses daily dustings are employed. In suppurating appendix and pelvic abscess, 20 to 30 Gm. of the powder is sprinkled into the peritoneal cavity after incision and irrigation. When used in the opened abdomen, the absorbability was found to correspond to the amount of peritoneal reaction. The same procedure is indicated as a preventive in gastrointestinal interventions.

*Long, L. W., and Dees, J. G.: Local use of sulfanilamide. Surg. (St. Louis), ix (June 1941), p. 878; abst., J.A.M.A., cxvii (Sept. 27, 1941), p. 1121.

Colles fracture was named for Abraham Colles (1773-1843) of Britain.

A Practical and Efficient Building for Horse Breeding

WILLIAM E. JENNINGS,* D.V.M.
Front Royal, Va.

A NEW BREEDING shed was recently completed at the Front Royal Quartermaster Depot (Remount). It is modern, practical, inexpensive and well suited to the needs of this station.

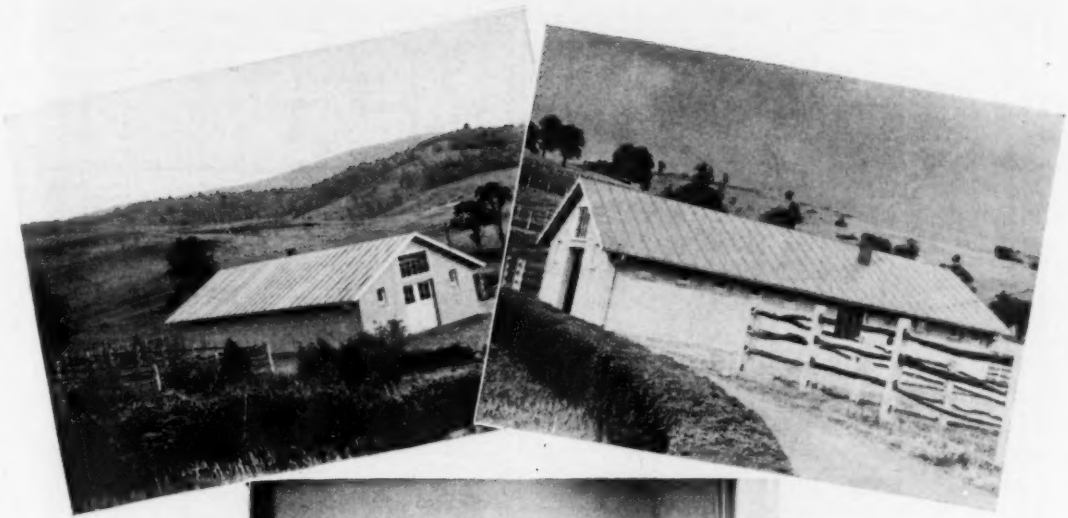
This shed has a four-fold purpose: first, breeding of 55 depot mares; second, breeding of privately owned mares; third, testing of stallions to be loaned to agents for breeding; and, fourth, culturing, suturing of vulva and vaginal examinations of broodmares. At each remount depot 55 depot broodmares are bred each year. In addition to our depot mares an average of 52 privately owned mares have been bred each year at this station during the past six years. Besides being used for the breeding of 107 mares yearly, the shed is used for the testing of newly purchased stallions and stallions being returned from agents. During the calendar year 1940, 57 stallions were tested here. Each was bred to a suitable mare in heat (test mare) from one to five or six times, depending upon the results of the initial test breeding, the bacteriologic and microscopic examination of the semen and the history of the stallion as a breeder.

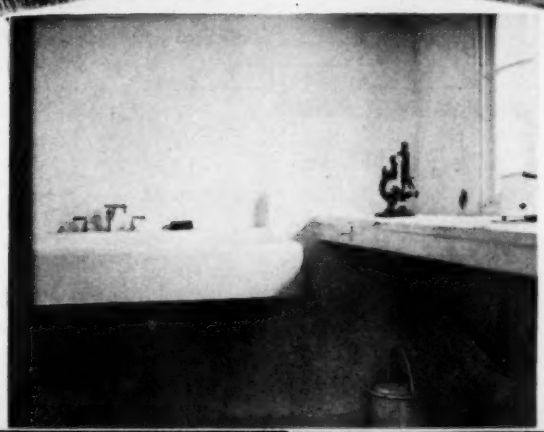
The outside walls are built of cinder blocks plastered inside and outside with a cement plaster. This gives both surfaces a reasonably smooth finish which can be painted easily. Several photographs are reproduced herein to show the exterior of the building. The building faces the north. Figure 1 is a view of the shed from the northeast corner. It shows the two large sashes (39″ x 44″) of four panes each in the two sliding doors. Above the sliding doors there is a large window (4′ 4″ x 8′). The same window arrangement is used in and above the rear doors (south). There are 23 small windows (20″ x 29″) in the outside walls of the building—twelve of which are in the breeding room. Figure 2 shows the west side of the building. Note that a large, stationary window (54″ x 63″) of nine panes provides abundant light for the laboratory room. The small door adjacent to this window is the only entrance to the furnace room where an 80-gal. hot-water tank is installed. This is heated by a hot-water heater of suitable size. In the distance may be seen one of the two broodmare stables. The other broodmare stable is about 700 yards southeast of the breeding shed and is not visible in this picture. On the north, west and south sides a deep layer of number 2 stone has been placed to improve the exterior appearance and to help in keeping the interior of the building clean.

Figure 6 shows the floor plan of the building. The floor of the breeding room is packed clay, except for the wash stand (5′6″ x 9′) for the stallions, which is 10 in. deep of number 2 stone. The stallions are taught to stand in the wash stand for washing just prior to and immediately following the breeding of each mare. The rafters in the room are 13 ft. high. It is important that these rafters be placed at this height to prevent injuries to the stallion's head when he mounts and dismounts. The door leading into the laboratory from the breeding room contains a sash (28″ x 38″) of four panes of glass. Figure 3 shows one corner of the laboratory. The double drainboard sink (60″ long) is convenient for washing buckets used in the preparation of the mare and stallion for breeding and for cleaning other equipment used in breeding and vaginal examinations. The 20-in.-wide table, bracketed to the wall under the large window, is 42½ in. from the floor and extends the full length of the room. The floor in the laboratory is concrete, with a suitable drain in the center.

Figure 4 shows the laboratory on the right and the arrangement of the teasing

*Captain, Veterinary Corps, U. S. Army, Front Royal Quartermaster Depot.





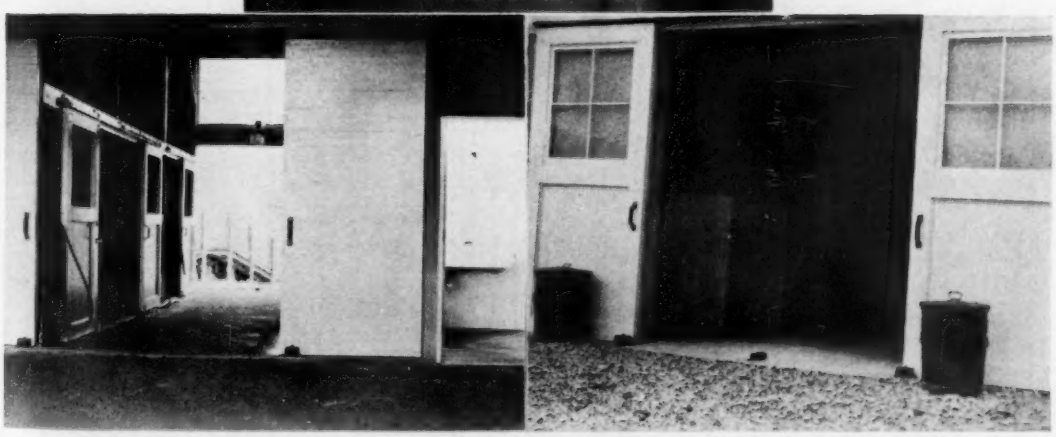


Fig. 1 (upper left): View of breeding shed from northeast corner, showing window arrangement in and above double, sliding front doors. Fig. 2 (upper right): View of shed from west side, showing lighting arrangement in laboratory. Fig. 3 (center): Corner of laboratory of breeding shed. Fig. 4 (lower left): Teasing stalls and laboratory. Fig. 5 (lower right): Arrangement of the three wash stalls for mares.

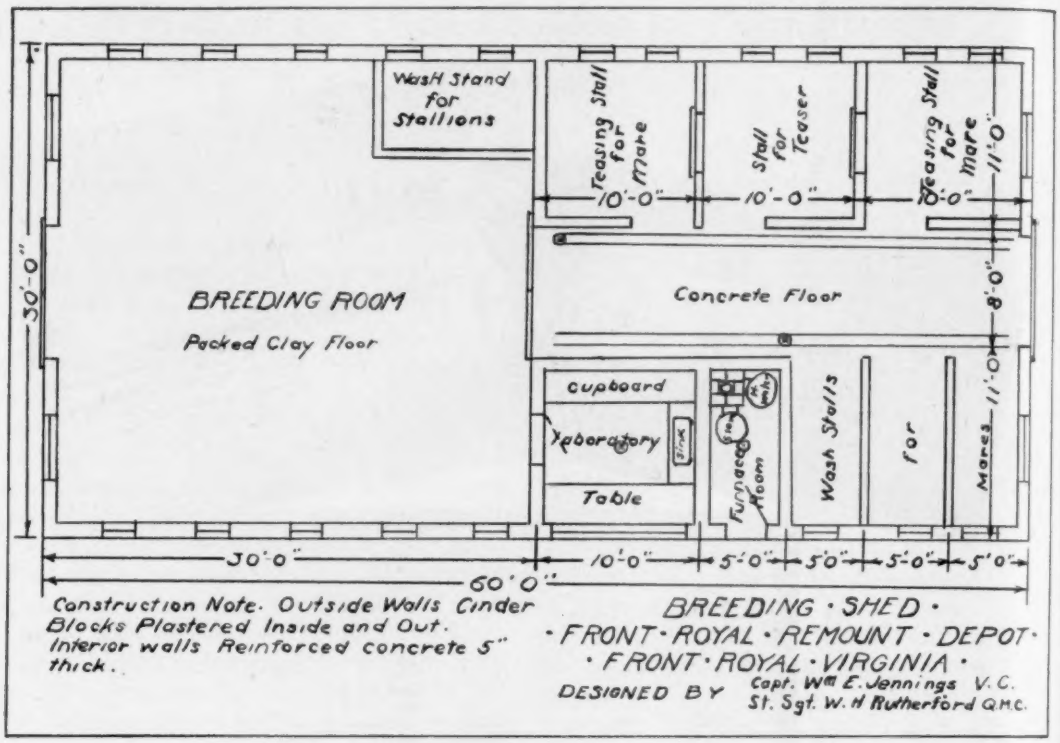


Fig. 6.

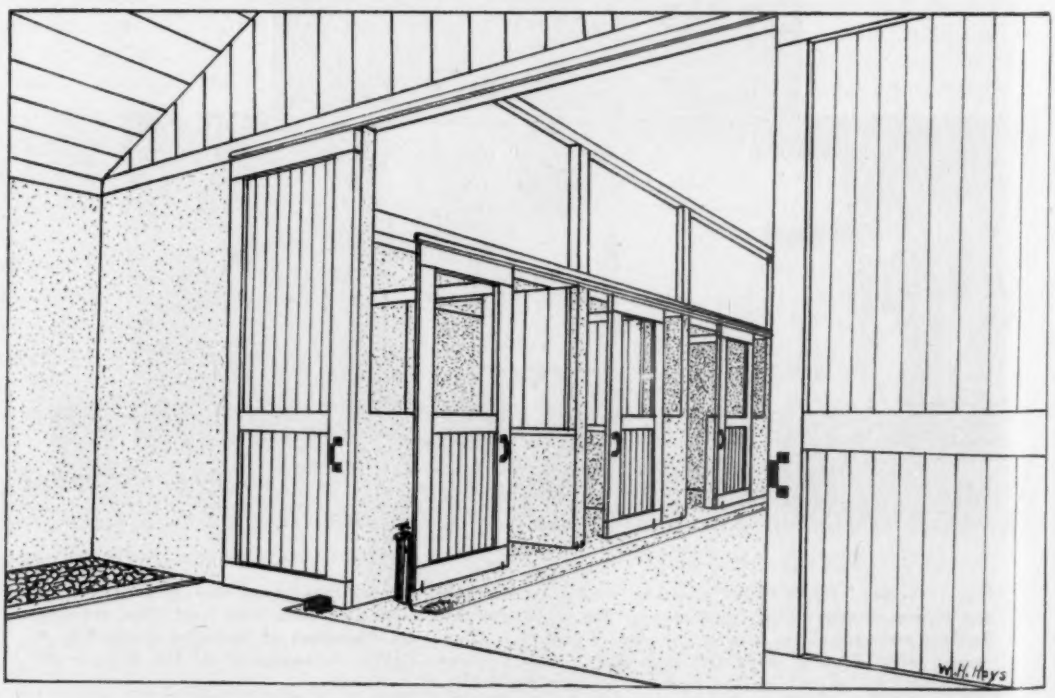


Fig. 7. View of teasing stalls from breeding room.

stalls. Through the rear door the unloading chute can be seen. Figure 7 shows more clearly the construction and arrangement of the teasing stalls. The center stall is used for the teaser and a mare is placed in each stall on either side of the teaser. The wooden doors (46" x 91") leading into these three box stalls are made of two thicknesses of 1-in. oak material. The remainder of the walls of these stalls are 5-in. reinforced concrete. There are two solid oak windows (40" x 42"), one on either side of the teaser's stall, which slide in a groove in the cement 4 ft. from the floor. Through these windows the teaser interviews the mares. The bottom of these windows is 4 ft. from the floor. The size, construction and height of the windows is highly important if a stallion is to tease properly and at the same time escape injury during the teasing process. All mares are regularly teased just prior to breeding to determine, first, if the mare is still in heat and, second, to cause the mare to empty the bladder. The front walls of the three box stalls (teasing stalls) and the partitions between the three wash stalls for the mares are reinforced concrete 5 in. thick and 4½ ft. high. The floor is concrete and in each stall the floor drains to the door, in front of which there is a shallow gutter to carry the waste (urine, milk, feces, etc.) into the drain located near the spigot.

On the other side of the building are three straight stalls 5 ft. wide which are used for washing the mares and preparing them for breeding. There is no manger of any sort in the stalls. For tieing the mares there is a ring placed in the head of each stall 4½ ft. from the floor. These stalls are shown in figure 5. The wash stalls have a concrete floor which drains to the rear of the stall into a gutter.

The loading chute located just in back of the building is 92 in. wide and 40 in. high. It consists of a platform (48" x 92") and an inclining runway 92 in. wide and 15 ft. long. The side wings are 45 in. high. The floor of the chute is slatted to prevent slipping. It is built of 2-in. planking throughout.

In addition to natural light there are four 250-watt bulbs with reflector shades. One of them is placed high in the rafters on either side of the breeding room. The remaining two are placed as follows: one just above the rear double doors (south) of the breeding shed and the other just above the solid, oak, sliding, double doors separating the breeding room from the rest of the building. In the laboratory the light fixture, which holds two 100-watt bulbs, is placed close to the ceiling. The furnace room has a smaller fixture of the same type.

At the close of the 1941 breeding season the laboratory will be painted white. All other parts of the building will be painted dark green to a point 4½ ft. from the floor, and white above including the under surface of the roof and its rafters. This, too, will make the building much lighter and easier to clean. In the construction of this shed care was taken to make the building light and easy to clean and disinfect. The only wood used is in the doors and windows and in the table and cupboard in the laboratory.

An adequate water supply is assured from springs which supply a new reservoir of 18,000-gal. capacity. The total cost of this building including labor was $2,630.70.

Raspberry Tea

Among the galaxy of pristine drugs was decoction of raspberry leaves—long since forgotten twilight sleep of the ancient doctors and midwives. "It looseneth the babies" was the action claimed for this product of the *herboriste*. Ten to 20 oz. of hot tea made with 1 oz. of raspberry leaves was the dose for a parturient woman. In August, *Lancet*, spokesman for British medicine, gave the treatment scientific sanction in an article by J. H. Burn and E. R. Withell. Experiments on laboratory animals proved that it does relax the uterus. "In obstetrical practice, it makes labor easy," adds a London doctor.

When meat, milk, butter and cheese are being doled out at so many ounces per day to whole populations, the work of the veterinary practitioner is a public service.

CLINICAL DATA

Sulfathiazole prevents coryza in cockerels and hens when fed at the rate of 3/16 Gm. per ounce of feed and, given *ad libitum*, the desired blood concentration is established.

The control of swine pox is mainly a matter of controlling lice. Pox is not transmitted by contact in louse-free hogs, and secondary lesions in hogs affected with pox are louse-borne.

More than one half of the benign tumors of horses and mules examined by Runnells and Benbrook of Iowa State College were located in the head. Malignant neoplasms were more scattered.

That sulfapyridine is a useful local treatment for ulcer of the cornea was reported at the meeting of the American Academy of Ophthalmology and Otolaryngology. —*Science News Letter.*

Sulfathiazole ointment is an effective treatment for many local infections, according to physicians of Johns Hopkins and Union Memorial hospitals, Baltimore.—*From J.A.M.A., Oct. 25, 1941.*

A study of the anthelmintic potency of phenothiazine in dogs, made by Kauzal and Whitten (*Australian Veterinary Journal*, Oct. 1941) revealed that no benefit was observed from its use against ascarids, whipworms, hookworms and tapeworms.

Coffee grounds gathered from the rolling kitchens and camps of the service of supply were fed to horses mixed with their feed. In Nicaragua coffee-berry pulp is fed to cows. As a feed for cows, says *Science News Letter*, its food value approaches that of good quality hay.

Goats maintained under nembutal anesthesia secrete milk of normal composition at normal rate, and the uptake of milk precursors continues. The observation was made while drawing blood samples under nembutal anesthesia.—*From Journal of Dairy Science, Apr. 1941.*

Nipple pails for calf feeding help reduce digestive upsets and calf scours, says *Jersey Bulletin.* Important contribution of the nipple pail to calf feeding is its effect of slowing up feeding time, permitting digestion to function normally in the calf's undeveloped digestive system.

Adult turkeys which have survived acute attacks of infectious catarrhal enteritis are the main transmitters of *Hexamita meleagridis*, the causative agent of this disease in chicks and poults.—*W. R. Hinshaw and E. McNeil in American Journal of Veterinary Research, Oct. 1941.*

In a study of equine encephalomyelitis virus (western) Graham and Levine of the University of Illinois found that a certain degree of immunity in guinea pigs and pigeons is produced by treating the pigeon virus with formalin.—*American Journal of Veterinary Research, Oct. 1941.*

Relative immunity to worm parasites seems to be due to the presence of an antienzyme which affects adversely the highly specialized enzyme which enables worms to digest and assimilate the host protein.—*A. C. Chandler (1937), cited by the Philippine Journal of Science, July 1941.*

Mayer and Bogart of the Missouri Agricultural Experiment Station (*Am. J. Vet. Res.*, Oct. 1941) describe a chemical test

for pregnancy in sows based upon the increased excretion of estrogens in the urine. Tests for the increment were made from the third, fourth or fifth week up to the eleventh week of gestation.

There is but little vitamin A stored in the fetus. The intake is used up as fast as it passes through the placental filter. In mothers which have received normal quantities of vitamin A during pregnancy, the colostrum overcomes the shortage in the newborn.—*From Hart and Guilbert, American Journal of Veterinary Research (Oct. 1941), p. 393.*

Although *Brucella abortus* did not survive long (24 to 96 hours) in experimentally infected cockroaches and flies, it is possible that since these insects are continuously exposed to contaminated material in a stable where brucellosis exists, they may be sources of transmission.—*From Ruhland and Huddleson, American Journal of Veterinary Research, Oct. 1941.*

Dragstedt (Lester R.) of the University of Chicago produced arteriosclerosis in dogs by depriving them of lipociac, the pancreatic hormone governing the utilization of fat as insulin governs the metabolism of sugar. Added to the fact that arteriosclerosis and diabetes frequently coexist, this discovery points to a common cause for two major human diseases—pancreatic disease.

To the recommended local treatments of bovine mastitis add iodized mineral oil. A solution of resublimed iodine (U.S.P.), 1:1,000 to 1:1,500, is instilled into the affected quarter in doses of 100 cc. to 300 cc. *via* the teat canal. As a rule, after a single injection, the treated quarter ceases to shed "mastitis organisms."—*D. A. Sanders in American Journal of Veterinary Research, Oct. 1941.*

Cottonseed-meal poisoning, once a much debated subject, is no longer the profound mystery it used to be. The toxic action of that excellent protein-containing feed is due to lack of vitamin A. When supplemented with vitamin A oils, crystalline carotene or green forage, there is no poisoning. To this end, the investigations of Hubert Schmidt of the Texas Agricultural Experiment Station are convincing.

A release of the Eastern Iowa association to the press gives the prevention and treatment of swine influenza as good housing, plentiful ventilation without drafts, clean and dry bedding, a constant supply of fresh water sheltered from contamination by germ-laden dust, and sprinklings of kerosene or crankcase oil over the bedding. Hog-cholera vaccination is a control measure because influenza-affected hogs have a low resistance to cholera.

Phenothiazine Toxicity

"I am wondering why it is that the BAI created the impression that phenothiazine is foolproof when given to horses, since reports to the contrary, which you have published, have shown up a toxic effect in a number of instances," writes a reader who prefers to have his name omitted.

Phenothiazine as an anthelmintic is taking the course of all spectacular cures, namely, the course of misuse. Under the heading "Some horses and mules react unfavorably to phenothiazine," a Bureau release of March 18, 1941, says:

> Wholesale treatment should be avoided. When a large number of horses are to be treated with phenothiazine, one or two of the least valuable of the lot should first be treated to determine whether they tolerate the drug. . . In all instances, the diagnosis of parasitism should be made and treatment given by a qualified veterinarian.

A survey of the unfavorable incidents following the use of the drug leaves much to be desired in regard to recommendations contained in the above quotation. The JOURNAL has written favorably about phenothiazine because the preponderance of reports prove that with the usual precautions taken by professional men in the treatment of helminthiases, the danger is minimal.

Hypoglycemia of Baby Pigs

Hypoglycemia of newborn pigs, supposedly due to a quantitative dietary deficiency in the sow before farrowing, is treated with a fair degree of success by administering glucose solution intraperitoneally and feeding the pigs with sugar solution or milk. The glucose is given in 5 to 10 cc. of a sterile 40 per cent solution distributed over a 24-hour period. The hand feeding also is spread throughout the 24-hour day and continued until the pigs learn to drink.—*From Animal Pathology Exchange, University of Illinois.*

An Outbreak of Anthrax in Georgia

Anthrax has never been a serious problem in Georgia. Records at the experiment station and at the state veterinary office show but one outbreak—in 1931 about ten miles from Atlanta. On August 6, 1941, Chief Veterinary Adviser T. B. Clower was called to a farm in Jackson county where the second mule had died within a week. One of us (T. J. J.) held the autopsy and made a tentative diagnosis of anthrax. A typical picture of anthrax was observed. The region from throat to breast had an edematous infiltration of gelatinous exudate. The internal organs were hemorrhagic and there was a yellowish exudate covering their serous surfaces. The spleen was about twice the normal size and had a distinct "raspberry-jam consistency." Sections of the spleen, lung and lymph glands were brought to the laboratory together with some fluid blood. Staining of the blood revealed large numbers of gram-positive bacilli. Plates were made from the tissues and blood and in twelve hours these showed the typical "medussa" head type of colony peculiar to *Bacillus anthracis*. A suspension of 0.5 cc. made from one loop and 5 cc. of sterile distilled water was injected subcutaneously into a guinea pig. The pig died 64 hours after injection and the organism was recovered from its spleen and heart blood. A second guinea pig, injected with the same amount, died in 30 hours and the organism again was recovered.

On August 9, three more mules were reported sick, and they died with typical anthrax symptoms on August 10. A total of five mules died on this farm during the outbreak.

All animals within a radius of three miles were vaccinated. Up to the present (September 5) no other deaths have been reported.—THOMAS J. JONES, B.S.A., D.V.M., *University of Georgia, Athens, Ga.;* ROLAND R. KUHN, Ph.D., *University of Georgia;* and T. B. CLOWER, D.V.M., *State Department of Agriculture, Atlanta, Ga.*

Vitamins in Practice

The effects of vitamins on gains, growth, vigor, nervous balance, general health and resistance to infections are not questioned. The facts have been established by animal experimentation and clinical use. The prevention and cure of blacktongue with nicotinic acid has been amply confirmed; discrete neuroses yield to thiamin hydrochloride; declining libido in certain bulls is stepped up with ascorbic acid; and, more and more, the close relation of vitamin A to vision and fragile bones has been proved. But the main gain in that field has been the realization that vitamin therapeutics is a problem of medicine because of its complexity and variations.

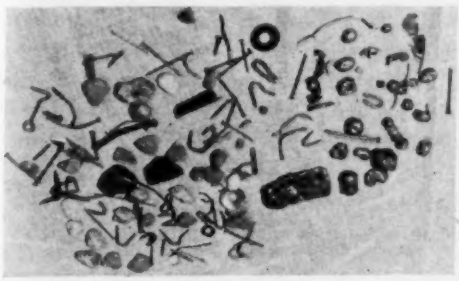
Vitamin E Paralysis

McCollum and Mackenzie (abst.,* *E.S.R.*, Nov. 1941, p. 712) describe a type of paralysis developed in rats fed on a vitamin E-deficient diet. The first stage of the paralytic state developed in 32 to 40 weeks. The symptoms were spreading of the hind limbs and lowering of the abdominal wall. The second stage began after 45 to 50 weeks of vitamin E privation. The symptoms were inability to walk on the hind limbs, tremors, fore-leg incoördination and, later, complete dragging of the hind limbs along the floor. The administration of vitamin E concentrate did not cure the paralysis, but it did prevent the progress of the neuromuscular symptoms.

*Society of Experimental Biology and Medicine, xliv (1940), pp. 95-98.

The Ferriphagous Bovine

The American Meat Institute in coöperation with the National Live Stock Loss Prevention Board has instituted a study of the eating of metallic objects by cattle. The high price of liver and the numbers of livers condemned by meat inspectors on account of abscesses in the substance of this catch-all organ are matters of considerable importance to the livestock industry. The object of the study is cause and prevention. Although hepatic abscesses have other causes, investigations carried out by veterinarians of the Chicago packers have shown that the part played by the swallowing of pointed metallic objects can not be discounted among the etiologic factors.

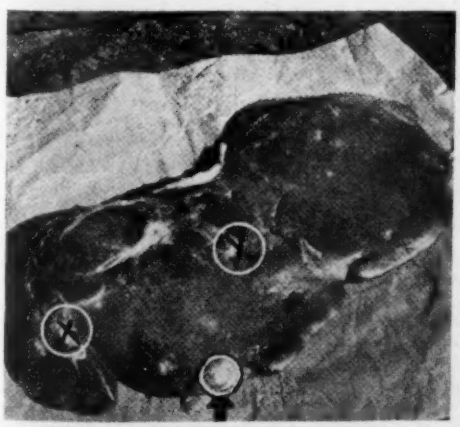


Metallic objects swallowed by cattle, collected by R. F. Vermilya.

The array of metallic objects shown herewith, collected by Ralph F. Vermilya of the veterinary staff of Wilson & Company, and the extensive investigation carried out in Chicago and Omaha in November of 1940 by L. D. Frederick, chief veterinarian of Swift & Company, indict the iron-swallowing habit as a cause *par excellence* of pyogenic processes in the livers of the abattoir. In coming to this indictment, Dr. Frederick examined 2,042 livers. Of the total number examined, he found metallic objects in the fore stomachs of 670, and in 387 (19%) the liver had been perforated, which is an extraordinary finding never before suspected.

As a consequence of the investigation, R. B. Smith, president of the National Live Stock Loss Prevention Board, circulated a questionnaire to 5,000 cattle feeders to obtain additional information and to institute preventive measures.

Pericarditis from penetrating metallic objects.



Abscesses on beef liver as indicated by crosses and arrow.

The records of the Meat Inspection Division, U. S. Bureau of Animal Industry, show that during the six months ending June 30, 1940, 2,199 beef carcasses were condemned for pericarditis, 90 to 95 per cent of these being caused by penetrating metallic objects. Attention is called also to the numerous fatalities from that cause among cattle on feed. As a matter of fact, losses of bovine ruminants and livers from ingesting metallic objects is something to be emphasized in animal production and veterinary medicine, not only in feedlots, but also on dairy farms.

Treatment of Ovine Taeniasis with Lead Arsenate*

ERNEST C. McCULLOCH, D.V.M., Ph.D., and JOHN E. McCOY, D.V.M.
Pullman, Wash.

THE DEGREE OF injury to lambs from tapeworms of the genus Moniezia is controversial. In their reference to the tapeworms infesting sheep, Hutyra, Marek and Manninger state, "The most important of these is *Moniezia expansa* which infects lambs and kids in the summer, and is sometimes found in older sheep." They describe the symptoms as "slight digestive disturbances, which are followed by listlessness, emaciation, retarded development, anemia, loss of wool, sometimes colic, and later on frequent tenesmus and diarrhea."

Quoting Mönnig[1]: "As a rule only lambs, kids and calves under 6 months of age become infected and show symptoms, but adult animals occasionally also harbour the parasite. Heavy infections are common, but even one or a few worms are able to produce disease on account of their large size. The pathogenesis is not quite clear, but the rapid growth of the worms and the prolific production of ripe segments indicate that much nourishment is required and obtained from the lamb, and that a large quantity of waste products must be eliminated by the parasite. These are probably absorbed to a fair degree and cause intoxication.

"The affected young animals show loss of vigour and strength and have a rough coat. They become stunted and markedly pot-bellied. Anaemia and consequent oedemas may develop. Constipation is sometimes seen and diarrhoea occurs in severe cases. Frequently a chain of segments is seen to hang out through the anus. Rare cases of infection in adult animals with paretic or other nervous symptoms have been described." As probable postmortem findings he lists poverty, a distended abdomen, pale mucous membranes, anemia and sometimes cachexia and dropsy.

Cameron[2] takes a more moderate view in stating: "There is no real evidence yet available that the *Moniezias* of sheep and cattle do any serious damage to the host. . . . The *Moniezias*, however, often occur in such large numbers that it seems reasonable to suspect that they may cause mechanical impaction, interfere with calcium metabolism or use undue quantities of food."

Clunies, Ross and Gordon[3] express much the same opinion in saying: "The common tapeworms of sheep, (*Moniezia spp.*), though formerly held to be of considerable pathogenic importance owing to their size and spectacular appearance, now are seldom thought to cause serious effects. It is probable, however, that in young lambs under six months old, heavy infections may cause some interference with normal growth, and intestinal derangement characterized by diarrhea and constipation."

Tunnicliff and Marsh,[4] who have conducted extensive research with range sheep, also doubt the pathogenicity of moderate infections. The consensus that moderate infections do not warrant medication is confirmed by the observation of Stoll[5] that lambs harboring Moniezia develop an active immunity against them which greatly decreases the hazard of further infection and may result in the expulsion of the tapeworms already present.

---

*Scientific paper No. 495, College of Agriculture and Agricultural Experiment Station, State College of Washington.

[1]Mönnig, H. O.: Veterinary Helminthology and Entomology (2nd ed., William Wood and Co., Baltimore, 1938), pp. 89-90.

[2]Cameron, T. W. M.: The Internal Parasites of Domestic Animals (A. & C. Black Ltd., London, 1934), 204 pp.

[3]Clunies, Ross and Gordon: The Internal Parasites and Parasitic Diseases of Sheep (Angus and Robertson, Ltd., Sidney, 1934), p. 41.

[4]Tunnicliff, E. A., and Marsh, H.: Personal communication.

[5]Stoll, N. R.: Tapeworm studies V. Absence of *M. expansa* from the sheep intestine early after infection. Am. J. Hyg., xxvi (1937), pp. 148-161.

However, it is the opinion of most students of this subject that heavy infections are definitely deleterious.

EXPERIMENTAL PROCEDURE

A local sheep raiser noticed that about 300 of his lambs were unthrifty and not making normal gains. They showed evidence of diarrhea and frequently passed segments of tapeworms identified as Moniezia sp. Ten of these lambs were brought to the clinic of the College of Veterinary Medicine. On October 21, seven were given 2 oz. of a preparation containing 24 Gm. of phenothiazine. Three were left as controls. No results were obtained from this medication.

The three control lambs were then given 0.5 Gm. of lead arsenate in capsules. The following day enormous numbers of tapeworm segments were passed and the lambs showed no ill effect from the treatment. Feed and water consumption remained unchanged. Four days later the remaining seven lambs were given like amounts of the lead-arsenate powder with similar results. Each of the entire flock of 300 was then given 0.5 Gm. of lead arsenate in capsules. No fatalities followed this medication nor were any lambs observed to be off feed. Tapeworm segments were passed in great numbers in the feces for three days. On January 30, the owner reported that the treated lambs were making gains above those of previous years and that no tapeworm segments had been observed recently in the feces. Autopsies of a number of the treated lambs four to eight months later failed to reveal the presence of tapeworms. This, however, is not conclusive experimental evidence of the efficacy of the medication, as sheep are known to lose these parasites spontaneously.

On August 6, 1941, 255 Hampshire lambs, showing definite symptoms of diarrhea and lack of characteristic thrift, were each given 0.5 Gm. of spray-grade lead-arsenate powder in gelatin capsules. As before, no harm was noted and enormous quantities of proglottides were passed.

Since Stunkard[6] has demonstrated galumnid mites to be the intermediate hosts of *M. expansa* and probably also of other anophocephaline cestodes, the life cycle of the Moniezia probably could be broken and the hazard of infection decreased by the early and repeated medication of lambs on pastures where the infection is picked up. This may prove practical for those owners whose flocks annually suffer the effects of heavy infections and who have spring pastures used only by their own flocks.

THE TOXICITY OF LEAD ARSENATE

The toxicity of lead arsenate for sheep previously has been investigated by St. John, McCulloch, Sotola and Todhunter,[7] who fed daily doses of 0.5 Gm. to two sheep. One died 35 days and the other 79 days after consuming 17.5 Gm. and 39.5 Gm. of lead arsenate, respectively. Daily doses of 1 Gm. killed one sheep after six days and another after seven days, while daily doses of 2 Gm. killed as early as two days and other sheep survived seven days. McCulloch and St. John[8] fed 0.25 Gm. daily to two sheep. One died at the end of 35 days after receiving 8.75 Gm. and the other was in reasonably good condition when the experiment was terminated at the end of 94 days. This sheep received a total of 23.5 Gm. of lead arsenate. Seddon and Ramsey[9] found that sheep survived single doses of 2.6 and 7.8 Gm. of lead arsenate, while 3.9 Gm. killed after twelve days, and a sheep fed 11.7 Gm. was moribund on the sixth day. They gave the nontoxic dose of lead arsenate as 2.592 Gm. and the lethal dose as 3.888 Gm.

SUMMARY

The administration of 0.5 Gm. of lead arsenate to yearling lambs appears to be a reasonably safe and effective taeniafuge against Moniezia sp. Phenothiazine in doses of 24 Gm. had no effect on this genus of tapeworm.

[6]Stunkard, Horas W.: The development of *Moniezia expansa* in the intermediate host. Parasitol., xx (1938), pp. 491-501.

[7]St. John, J. L., McCulloch, E. C., Sotola, J., and Todhunter, E. N.: Toxicity to sheep of lead arsenate and lead arsenate spray residues. J. Agr. Res., lx (1940), p. 317.

[8]McCulloch, E. C., and St. John, J. L.: Lead-arsenate poisoning of sheep and cattle. J.A.V.M.A., xcvi (1940), p. 321.

[9]Seddon, J. R., and Ramsey, A. A.: Toxicity of certain arsenic and lead compounds for sheep. N. S. Wales Dept. Agr., Vet. Res. Rpt. No. 6 (1933), pt. 3, p. 113.

Subacute Arthritis and Septicemia of Streptococcal Origin in Silver Foxes*

R. G. BENEDICT, M.S., WALTER WISNICKY, D.V.M., and ELIZABETH McCOY, Ph.D.
Madison, Wis.

SUBACUTE STREPTOCOCCAL arthritis has not been encountered frequently in routine autopsies in silver foxes examined in our laboratories. However, three cases of streptococcal arthritis and two cases of streptococcal septicemia, originating on the same fox ranch, have come to our attention. The infrequent occurrence, the clinical findngs and the possible origin of infection were deemed of sufficient interest to merit a report of these cases.

REVIEW OF LITERATURE

A survey of the literature reveals only one similar outbreak of septic arthritis in young foxes. According to Bain,[1] the sick foxes showed high temperatures and swelling of shoulder, hip and hock joints. Cultures from the pus in the affected joints, and in some cases from the blood and the internal organs as well, resulted in the isolation of beta-hemolytic streptococci belonging to Lancefield group C. Infective horse meat was thought to be the most likely source of the microörganisms. Hignett and King[2] reported that Lancefield group C streptococci had been isolated from commercial horses in such conditions as strangles, rhinitis, sinusitis, pneumonia, purpura hemorrhagica, poll evil, fistulous withers and wounds. Strains of "animal pyogenes" group C have also been known to cause pneumonia, metritis and wound infections in these animals. Of more direct interest to the problem of streptococcal infections in foxes is the report of Stafseth, Thompson, and Neu,[3] who studied two cases of articular or muscular rheumatism in dogs. Both were treated with autogenous vaccines with apparent success. Hare and Fry[4] reported infections in dogs by beta-hemolytic streptococci. The disease was manifested in adults and puppies of either sex as an adenitis, as a septicemia, or in the female as an interference with the estrual or breeding cycles. Twenty-nine strains from 75 positive cases were examined by Fry and, of these, 28 were classified in Lancefield group G, and the remaining one in group A.

CLINICAL HISTORY OF CASES

The practice of purchasing old or incapacitated horses for fox feed and butchering them on the ranch is common among fur farmers in Wisconsin. The fur rancher, who made possible this study by furnishing specimens, had bought such a horse. He noticed a large, subcutaneous abscess on the right pectoral region. This abscess was cut away and discarded. About ten days later, he lost two foxes and brought them to the laboratory, together with a sick 10-week-old fox pup which had been tamed and kept as a household pet. The animal was dull and listless and manifested some lack of coördination of leg movement. Examination showed a large swelling in the right femoro-tibial joint, which was painful to touch. The animal was taken back to the ranch and died five days later. The owner brought the carcass back, along with that of another pup which had exhibited similar symptoms.

The autopsy reports on these animals were as follows:

Foxes 1 and 2.—There was no involvement of the leg joints of either animal. Gross pathologic lesions were lacking, except in fox No. 2. This animal showed evidence of acute nephritis, lobar pneumonia and a moderate cystitis.

"Sparky" (Tame Pup), No. 3.—The lungs showed severe congestion, and sections cut through the lobes revealed a thick, mucopurulent material in the bronchioles. A similar fluid was found in the thoracic cavity. The liver was friable and showed some fatty degeneration. One testis was undescended and ap-

*From the Department of Agricultural Bacteriology and the Department of Veterinary Science, University of Wisconsin; a project of the University's fox and mink research program.

[1]Bain, A. F.: Rpt. Ontario Vet. Coll. (1938), pp. 49-50.

[2]Hignett, S. L., and King, W. S.: Vet. J., xcvi (1940), pp. 81-84.

[3]Stafseth, H. J., Thompson, W. W., and Neu, Lisa: J. A. V. M. A., xc (1937), pp. 769-781.

[4]Hare, T., and Fry, R. M.: Vet. Rec., 1 (1938), pp. 213-218.

peared swollen and infected. About 80 cc. of thick, purulent exudate resembling sour cream was expressed from the right femoro-tibial joint cavity, this being the swollen joint examined five days previously.

Male Pup No. 4.—The right femoro-tibial joint presented the same pathologic picture as that of the tame pup. In addition, there was a severe cystitis with bloody urine and a severe enteritis involving the entire intestinal mucosa.

Male Pup No. 5.—This case of arthritis came to our attention about a month after the preceding cases. The animal was unable to hold himself upright and the joints of both front and hind legs were swollen and painful. He was given 5 gr. of sulfanilamide by the mouth, but died later that day. A purulent exudate was expressed from the region of the carpals on each front leg and from the right femoro-tibial and tarsal joints. There was severe gastritis with dark coagulated blood in the stomach, ecchymotic hemorrhages in the spleen, friable liver and inflammation of the pericardium with increased fluid in the pericardial sac.

BACTERIOLOGIC FINDINGS

Beta-hemolytic streptococci were isolated from all of the animals. They were the predominating type in all of the expressed purulent exudates and their presence in the visceral tissues and lungs of all of the animals indicated a streptococcal septicemia. From male pup No. 4, a secondary invader identified as *Proteus ammoniae* also was found. This organism was described by Magath[5] as the etiologic agent of encrusted cystitis in man.

Physiologic studies on representative streptococcal strains isolated from each animal showed that the organisms were identical. All strains fermented maltose, sucrose, lactose, sorbitol and salicin. Arabinose, trehalose, raffinose, inulin, glycerol and mannitol were not affected. They were tentatively classified as "animal pyogenes" streptococci (Lancefield group C). Serologic confirmation was established through the use of the Lancefield micro-precipitin technic.[6] Extracts of all the strains isolated from the foxes formed flocs rapidly when tested with "animal pyogenes" group C antiserum.

[5]Magath, T. B.: J. Inf. Dis., xliii (1928), p. 181.

[6]Lancefield, R. C.: Proc. Soc. Exp. Biol. & Med., xxxviii (1938), pp. 473-478.

DISCUSSION

The time of appearance of these cases of streptococcal arthritis with subsequent septicemia and death following the feeding of meat from a horse known to have had a large abscess enables the authors to suggest a possible source of the organisms. Although the opportunity for examination of the chest abscess or visceral tissues of the horse was not presented, it is probable that the organisms were carried by the horse meat directly to the animals. This hypothesis assumes that the streptococci might have broken away from the abscess and gained entrance to the lymphatic system of the horse for more general distribution. If this assumption is correct, it is difficult to explain why a larger number of foxes were not affected, since the method of grinding and mixing the horse meat with other ingredients of the ration was such that a relatively uniform amount of the meat was probably consumed by each animal on the ranch. Other possible sources of the infective organisms are not easy to suggest. The authors have occasionally isolated "animal pyogenes" group C streptococci as secondary invaders in distemper, in pneumonia, and occasionally from visceral tissues wherein the organism had been localized in nonspecific disease conditions. This species, then, is not a new one in silver foxes, but the occurrence of several severe infections within a short time on one ranch is remarkable.

A culture of these organisms (1 cc. of a heavy suspension isolated from one of the dead pups) was mixed with the feed given to two red fox pups. These pups suffered no ill effects from the feeding. Either the organisms did not survive the passage through the upper digestive tract or could not establish an infection in red foxes by this route.

SUMMARY

Three cases of streptococcal arthritis and two cases of septicemia occurring in silver foxes have been studied.

The etiologic agent was identified by

Virus Infections

INFECTION was an obvious fact long before the cause was understood. Since it was discovered that certain diseases are caused by specific microörganisms, it has become the habit to classify such diseases as microbic without pausing to analyze just what is considered a microörganism. After the discovery of the tiny animals and plants (protozoa and bacteria) years of research were required to prove their relation to contagion and infection. With the coming of the microbiologic era of infectious diseases, it became heretic to consider that such diseases could be caused in any other manner. In 1898, the virus era began through the discovery that the specific agent of tobacco mosaic would pass through filters impervious to ordinary microörganisms. Soon other such agents were found to have that property. Thus, viruses were added to the other groups of microbic agents: bacteria, fungi, spirochetes, protozoa.

To be relinquished in the study of viruses is the idea that they should be compatible with visibility. There is no mystery about the importance of virus diseases. Each stratum of life from man to bacteria is involved. Virus diseases of plants make great inroads upon sources of income. In animals, foot-and-mouth disease, hog cholera, swine influenza, cattle plague, fowl pox, equine encephalomyelitis, avian encephalitis and laryngotracheitis are costly diseases. In man, there is smallpox, yellow fever, measles, poliomyelitis and others. Even bacteria, which "keep our planet from becoming as barren as the moon," have their virus diseases.

(*Continued from preceding page*)

physiologic and serologic tests as "animal pyogenes" (Lancefield group C).

The most probable source of the organisms was infective horse meat that was mixed with the rest of the fox ration.

Attempts to produce arthritis or septicemia in red fox pups by direct feeding of a pure culture isolated from one of the fatal cases of arthritis were unsuccessful.

The virus is something tangible, even though unseen. The use of filters was conceived to separate bacteria from their toxins. In this manner agents passing through the candle with toxin, which were capable of multiplying, gave birth to the virus era. Since very tiny bacteria pass through the more porous filters and some viruses are difficult to filter, workers of the present time speak of "viruses" instead of "filtrable viruses," a term that is somewhat misleading. The approximate size of a large number of viruses is now known. Their particles vary from 250 $\mu\mu$ to 8 $\mu\mu$. Those of vaccinia and psittacosis border on visibility. Those of foot-and-mouth disease and poliomyelitis will never be resolved with ordinary light. It is erroneous to suppose that all viruses are alike or that all of them are quite different from minute bacteria, some of which pass as readily through filters as the viruses of psittacosis and vaccinia. Much of the complexity of virus components has been clarified in recent years by chemical examination and immunologic studies. The latter, in some instances, are the more revealing.

The fact that no virus can, as yet, be cultivated in the absence of living media casts no mystery over viruses. Obligate parasitism is not unknown among the visible microbes. The malaria protozoan will not grow on non-living media; then why should viruses not require host cells for propagation? The smaller the microbe, the more likely it is to be obligate. Green believes that all viruses are obligate, lacking constituents for autonomous existence. The theory is plausible, but it does not account for everything in the virus field.

There is a close relation between the virus and the host cells. The indication is that it multiplies within the involved cell, probably aided by processes of autocatalysis. Anyway, there is a close relationship between the virus and the host cell, which accounts for many of the features of virus diseases. Intracellular parasites are admittedly not limited to virus infections. But no other groups of infectious agents

exert all of their force through intracellular action as do the virus group.

Viruses act in three ways, or a combination of them, namely: (1) They may destroy the invaded cells immediately, (2) they may first stimulate and then destroy the cells, and (3) they may only stimulate them. These actions account for the clinical picture of the various virus diseases: necrosis, vesication, pustulation.

Inclusion bodies occurring in the cell nucleus or cytoplasm, or both, are not pathognomonic of a virus disease, since these are found in the absence of a demonstrable virus. They are, however, of great importance in the study of this class of infections, in pointing out the type of virus to be sought.

The virus reaction is not primarily an inflammation. The inflammation is secondary to the cell destruction. Bacterial infections cause the outpouring of polymorphonuclear leucocytes; virus diseases are usually characterized by mononuclear cells.

Viruses are largely host specific and to a certain extent attack only certain groups of the host's cells. Attempts have been made to classify this tropism, but such a classification is not satisfactory because but a few viruses thus limit their place of attack. Epitheliotropic, neurotropic, endotheliotropic, mesotheliotropic and pantropic viruses have been named for the kind of cells they attack. Examples of strict tropism are the virus of papilloma of rabbits and wart virus, but bacterial diseases also have selective localizations: pneumonia, meningitis, typhoid fever. In both instances (virus and bacteria), clinicians are able to make a diagnosis with a fair degree of regularity, although laboratory aid is often required, particularly in diseases of the central nervous system. The only difference in the two groups is that the virus can not be cultivated in ordinary laboratory media. Otherwise, the investigation of the one is the same as the other.

Immunologic studies are widely used in virus-disease studies. Centuries ago persons recovering from certain maladies were known to possess life immunity. This is strikingly characteristic of virus infections and is used in investigational work, through the immunity conferred in experimentally infected animals.

As to treatment, the virus disease is the same as other infections. As in the bacterial diseases, the treatment is largely expectant, the use of certain antiserums and antitoxins excepted. In regard to bacterial infections, chemotherapy has changed the whole picture, but as yet no advance has been made in that respect in the treatment of virus diseases. The prospect, however, is hopeful. Chemotherapy appears to be the most likely source of curative agents.

Regarding serum therapy, though much effort has been made in that connection and most virus diseases have been so treated, the results have not been encouraging, and in view of what is known about viruses, serum treatment is not likely ever to yield the desired results. Viruses are intracellular and antibodies do not enter cells. It is not possible for a therapeutic serum to reach the infectious agents. Viruses are susceptible to attack by immune serum only when on their way to attack normal cells not already involved. The reason poor results are obtained from the use of antiserums is that at the time symptoms appear all of the cells that are going to be attacked have already been penetrated by the virus. There may be exceptions to this statement.

Vaccination originated in the virus field when Jenner discovered the prevention of smallpox. Yellow fever was made preventable by vaccination in recent years. A vaccine for encephalomyelitis of horses has been developed and the prevention of influenza (human) seems to be in the offing.

There is nothing peculiar about the spread of virus diseases. In plants, they are spread by insects. Yellow fever is transmitted by the mosquito and the majority of the virus diseases of man are spread by contact or by means of atmospheric infections. Only by sterilizing the air we breathe could the scattering of virus diseases be stopped. Quarantine measures as ordinarily enforced may make people believe that public health officials are doing something, but the money spent might be used to better advantage. The people should

demand that expensive and unessential things that interfere with business and social activities be abolished.

Virus diseases resemble other infections. They belong to the large category of infections. Every case arises from the transmission of the virus from one host to another, but epidemics do not arise from a new fabrication of the etiologic agents. Though new agents may have come into existence, there is no evidence to show that a single new one has come into existence since the beginning of recorded history.

It matters not whether a virus is a nonliving crystal of a tiny obligate parasite, the general principles involved in solving the problem of virus diseases are the same as those applying to other classes of microbic infections. [The vaccination of hogs against cholera, which is generally conceded to be the most perfect vaccination yet discovered, is not mentioned by the author, nor is rabies vaccination in man or animals a part of the thesis.] [*Rivers, Thomas M., director of the hospital of The Rockefeller Institute for Medical Research. Virus Infections. Bulletin of the New York Academy of Medicine, xvii (April 1941), pp. 254-258.*]

Bot Treatment*

When bot eggs attached to the hair of horses are treated with hot water (105 F.), they pop out of the shell and soon perish. The hot water may be applied with a cloth, rag or sponge. Two weeks after the first killing frost is the right time to thus force the eggs to hatch. Because bot flies are no longer active and no more eggs will be laid, reinfestation will not occur until the next spring, but one should let two or three weeks elapse to allow the larvae to settle in the stomach. Thus, December, January and February are the proper months to administer the larvicide treatment (carbon disulfide).

Six drams of carbon disulfide given on an empty stomach is the dose recommended for a 1,000-lb. horse. The medication is about 100 per cent effective and, besides, removes large roundworms. Laxatives are apt to be detrimental.

Organized bot-control campaigns pursued on an area basis comprising several counties give excellent results.

*Jones, M. P., and Lowe, C. D.: Horse botflies and suggestions for organized control. USDA.

Shark Liver Oil Augments Vitamin A in Milk*

The vitamin content of milk does not correspond to its yellow color. The yellow milk of the Guernsey may contain less carotene than the milk of the Holstein-Friesian of equal color.

Feeding additional carotene is not always practical and has been only partly successful. The ability to absorb carotene is a factor. Cod liver oil is toxic when fed in large amounts, that is, in amounts needed to augment the vitamin A content of milk. On the other hand, shark liver oil not only increased the amount of vitamin A, but also of butterfat in cows receiving 700,000 international units daily. The increase continued through the 23 weeks during which that oil was fed. The increment was in vitamin A, not in carotene. The butter with the highest A content was almost colorless. Standard methods of assay were used. The work was done with the collaboration of the Los Angeles Medical Milk Commission at the Department of Biochemistry, University of Southern California. The conclusion was that shark liver oil is a practical and economical source of vitamin A for the feeding of dairy cows.

*Deuel, H. J., Jr., and Nuttall, J. P.: The effect of shark liver oil on the vitamin A content of milk and on milk production. Cert. Milk, xvi (Oct. 1941), pp. 3, 19, 22.

Early determination of sex is essential to the welfare of poultry production. Although "sexing" chicks is a growing custom, it is not practiced among the small producers. The poultryman in this respect is like the stockman who would feed male calves for months before segregating the bulls from the heifers, is the way *Successful Farming* puts it.

EDITORIAL

United States Pharmacopoeia XII

THE TWELFTH DECENNIAL revision of the American codex (U. S. P. XII) will contain over 200 new preparations and will discard about 80 old ones as harmful, useless or unnecessary. Both of the lists (new admissions and deletions) released contain names of importance in veterinary medicine.

Many of the new admissions are already widely employed routinely in animal medicine. They include the new vitamin fractions (thiamin, nicotinic acid, etc.), and the estrogenic and other hormones of unchallenged merit in the veterinary clinic. Their dynamics were assayed in the veterinarian's field. The familiar barbituric derivatives and the sulfonamide group of germ killers have won a seat in the official roster. Biologic therapy furnishes one addition—tetanus toxoid. The list of new admissions reflects the ascent of chemotherapy in the last ten years, and is, therefore, worthy of a critical survey. The additions are, in fact, "proposed new admissions" subject to further revision, and the Subcommittee on Nomenclature may change some of the titles. In the following lists,* names of special interest to veterinarians are printed in italics. The parenthesized words are trade names:

*Taken from *The Journal of the American Medical Association*, Sept. 6, 1941, pp. 883-885.

PROPOSED NEW ADMISSIONS

Acetophenetidin Tablets
Acetylsalicylic Acid Tablets
Acid Aminoacetic
Ascorbic Acid Tablets
Ammonium Mandelate Syrup
Nicotinic Acid Tablets
Tannic Acid Solution (for burns)
Adhesive Plaster, Sterile
Alumina Hydrated
Alumina Hydrated, Magma
Ammonium Chloride Capsules
Amphetamine (Benzedrine)
Amphetamine Sulfate
Amphetamine Sulfate Tablets
Atropine Sulfate Tablets
Barbital Tablets
Soluble Barbital Tablets
Bismuth and Potassium Tartrate Injection
Bismuth Subsalicylate Injection
Bismuth Sulfarsphenamine (Bismarsen)
Blood (Normal Human Blood)
Butaprobenz Sulfate (Butyn Sulfate)
Butesin Picrate
Butesin Picrate Ointment
Butyl Aminobenzoate (Butesin)
Caffeine with Sodium Benzoate Injection
Calcium Gluconate Injection
Calcium Mandelate
Calcium Sulfate
Calcium Sulfate Bandage
Capsules (General Chapter)
Carbarsone
Carbon Tetrachloride Capsules
Cascara Sagrada Extract Tablets
Cenopodium Oil Capsules
Chiniofon Tablets (enteric coated)
Chlorazodine (Azochloramide)
Chlorazodine Solution
Citrated Human Plasma
Codeine Phosphate Tablets
Codeine Sulfate Tablets
Colchicine Tablets
Desoxycortone Acetate (Desoxycorticosterone Acetate)
Dextrose Injection
Dextrose and Sodium Chloride Injection
Digitalis Capsules
Digitalis Injection
Digitalis Tablets
Dihydromorphinone Hydrochloride (Dilaudid)
Dihydromorphinone Hydrochloride Tablets
Diphenylhydantoin Soluble (Dilantin Sodium)
Diphenylhydantoin Soluble, Capsules
Emetine Hydrochloride Injection
Ephedrine Sulfate Tablets
Epinephrine Hydrochloride Injection
Epinephrine Hydrochloride, Strong Solution (1:100)
Ergonovine Maleate
Ergonovine Maleate Tablets
Ergonovine Maleate Injection
Ergotamine Tartrate
Ergotamine Tartrate Tablets
Estradiol Benzoate
Estrone
Estrone Injection (in Oil)
Estrone Tablets
Ethyl Aminobenzoate Ointment
Ethyl Carbamate
Eucatropine Hydrochloride (Euphthalmine HCl)
Gauze, Absorbent
Gauze, Absorbent, Sterile
Gauze, Adhesive Absorbent
Gauze Bandage
Globulin, Human Immune
Halibut Liver Oil
Halibut Liver Oil Capsules
Hexylresorcinol
Homatropine Lamels
Human Serum
Injections (General Chapter)
Insulin Injection
Insulin, Crystalline Zinc, Injection
Insulin, Protamine Zinc, Injection
Iron and Ammonium Citrate Capsules
Iron (Ferrous) Sulfate, Exsiccated
Ferrous Sulfate Tablets
Lamels (Eye Disks)
Tribasic Magnesium Phosphate Tablets
Magnesium Trisilicate
Magnesium Trisilicate Tablets
Menadione (Vitamin K Activity)
Menadione Tablets

Mercurin (Pharmaceutic Necessity)
Mercurphylline (Mercupurin Solution)
Mercury Salicylate Injection
Mersalyl (Salyrgan)
Mersalyl with Theophylline Injection
Metarsen (Mapharsen)
Methenamine Tablets
Morphine Sulfate Tablets
Neocinchophen Tablets
Neostigmine Bromide (Prostigmine Bromide)
Neostigmine Bromide Tablets
Neostigmine Methyl Sulfate (Prostigmine M. S.)
Neostigmine Methyl Sulfate Injection
Nicotinamide
Nicotinamide Tablets
Oleovitamin A Capsules
Oleovitamin A and D Capsules
Concentrated Oleovitamin A and D Capsules
Ox Bile Extract Tablets
Ouabain
Ouabain Injection
Soluble Pentobarbital Tablets
Pentothal Sodium
Phenobarbital Elixir
Phenobarbital Tablets
Soluble Phenobarbital Tablets
Phenolsulfonphthalein Injection
Physiological Solution of Chlorides (Ringer's Solution)
Physostigmine Lamels
Picrotoxin
Picrotoxin Injection
Potassium Chloride
Potassium Chloride Tablets
Progesterone
Progesterone Injection
Quinacrine (Atabrine)
Quinacrine Tablets
Quinidine Sulfate Tablets
Quinine Hydrochloride
Quinine Hydrochloride and Ethyl Carbamate Injection
Quinine Sulfate Tablets
Radium
Riboflavine
Riboflavine Tablets
Rice Polishings (Tikitiki)
Rice Polishings Extract
Saccharin Soluble Tablets
Serum, Human Scarlet Fever Immune
Serum, Human Measles, Immune
Sodium Citrate Solution, Sterile
Sodium Nitrite Tablets
Sodium Salicylate Tablets
Sodium Sulfite
Strophanthin Injection
Strychnine Sulfate Tablets
Sulfanilamide Tablets
Sulfarsphenamine
Sulfapyridine
Sulfapyridine Tablets
Sulfapyridine Soluble (Sterile for Injection)
Sulfathiazole
Sulfathiazole Tablets
Sulfbromophthalein (Bromsulphalein) Soluble
Suprarenal Cortex Extract (Cortin)
Suprarenal Cortex Injection
Surgical Silk
Surgical Silk, Sterile
Suture, Surgical, Synthetic
Suture, Surgical, Synthetic, Sterile
Tablets (General Chapter)
Testosterone Propionate
Testosterone Propionate Injection
Testosterone Propionate Tablets
Tetanus Toxoid
Tetracaine Hydrochloride (Pontocaine HCl)
Tetrachloroethylene
Tetrachloroethylene Capsules
Theobromine with Sodium Acetate
Theobromine with Sodium Acetate Capsules
Theophylline Tablets
Theophylline with Ethylenediamine Tablets
Theophylline with Ethylenediamine Injection
Theophylline with Sodium Acetate Tablets
Thiamine Hydrochloride Elixir
Thiamine Hydrochloride Tablets
Thyroid Tablets
Thyroxine Tablets
Totaquine
Tribromoethanol (Avertin)
Tribromoethanol Solution (Avertin with Amylene Hydrate)
Trichloroethylene (pearls)
Urea
Yeast
Yeast Tablets

PROPOSED DELETIONS

Acetum Scillae
Acidum Aceticum Dilutum
Acidum Acetyltannicum
Acidum Sulfuricum Aromaticum
Aconitum
Acriflavina
Acriflavinae Hydrochloridum
Aethylhydrocupreinae Hydrochloridum
Albumini Tannas
Ammonii Benzoas
Ammonii Bromidum
Ammonii Salicylas
Arseni Triiodidum
Asafoetida
Bismuthi Subgallas
Calcii Bromidum
Calcii Creosotas
Cannabis
Cantharis
Capsicum
Carbromalum
Ceratum Cantharidis
Cinchona
Copaiba
Creosoti Carbonas
Creosotum
Dichloramina-T
Elixir Glycyrrhizae
Emplastrum Cantharidis
Emulsum Asafoetidae
Extractum Cannabis
Extractum Nucis Vomicae
Ferrum
Fluidextractum Belladonnae Radicis
Fluidextractum Cannabis
Galla
Guaiacol
Hydrargyri Iodidum Flavum
Iodoformum
Kino
Liquor Ammonii Acetatis
Liquor Ferri Chloridi
Liquor Ferri Tersulfatis
Liquor Sodii Hypochloritis Dilutus
Magma Ferri Hydroxidi
Massa Hydrargyri
Merbaphenum
Mistura Opii et Glycyrrhizae Composita
Oleum Maydis
Oleum Santali
Paraffinum
Paraffinum Chlorinatum
Pepsinum
Pilulae Aloes
Podophyllum
Potassi Chloras
Pulvis Ipecacuanhae et Opii
Pulvis Sennae Compositus
Pyrogallol
Quinina
Resina Podophylli
Santoninum
Scilla
Serpentaria
Sodii Acetas
Spiritus Aethylis Nitritis
Spiritus Chloroformi
Strychninae Nitras
Sulfonethylmethanum
Sulfur Lotum
Syrupus Ferri Iodidi
Syrupus Scillae
Terebenum
Theobromina cum Sodii Salicylate
Tinctura Aconiti
Tinctura Cantharidis
Tinctura Capsici
Tinctura Cinchonae Composita
Tinctura Ferri Chloridi
Tinctura Kino
Tinctura Scillae
Tinctura Valerianae
Tinctura Veratri Viridis
Unguentum Gallae
Valeriana
Veratrum Viride

PROPOSED NEW PHARMACEUTIC AIDS (VEHICLES, FLAVORS, COLORS, ETC.)

Amylene Hydrate
Bentonite
Cudbear
Glycyrrhiza Syrup
Ointment, Yellow (Simple Ointment with Yellow Wax)
Ointment (Absorption-base-type)
Soda Lime
Water for Injection

With perhaps a few exceptions the most drug-minded veterinarian will approve most of the deletions. On the whole, their exeunt from the therapeutic stage is welcome. There is, however, reason to regret the deletion of certain drugs which, notwithstanding their just rating in human medicine, have excellent and reliable medicinal properties in animals. For example:

Cantharides.—The skin of the horse lends itself well to the application of epispastics in the treatment of lameness and, regardless of opinions based upon their inapplicability to the skin of the human being, their usefulness in arthritic and tendinous disorders is not doubted by the most critical observer. Moreover, if so-called blistering is to be continued in the treatment of lameness in horses, as it obviously will, cantharides, owing to its reliability and uniformity of action, ranks first among the cutaneous irritants. To the experienced veterinarian, deleting the "fly blister" is ill-advised on the grounds, bitterly contested through the years, that modern medicine has furnished nothing of value to replace it. There appears to be no doubt that the cutaneous irrigation of the thick, hairy, sweating skin of the horse has relations to the metabolism of subjacent structures that are capable of modifying the course of the healing process in injured periosteum, bones, tendons, ligaments and synovial membranes.

To fulfil its mission modern medicine must sanction the unobjectionable practices handed down through the centuries *vis à vis* minds as keen and observing as the old horsemen.

Santonin.—On the ground that better anthelmintics are now available, santonin is discarded from U. S. P. XII. This decision should be disapproved, not alone on clinical observations by the millions through many decades, but more particularly upon the many controlled experiments of record which have established the vermifuge power of this drug with precision. In veterinary medicine, santonin is not given the classification of anthelmintic. It is regarded only as an ascaricide, of which it has been called "the king." Besides being kind to the host, santonin in proper dose followed by a saline cathartic removes all of the ascarids from pigs. Since food production is becoming increasingly important, and ascarids are capable of diminishing the supply of pork to a considerable degree, such a drug should not be wafted from the American codex because it is no longer regarded as utilitarian in human medicine. Since the days of sanitary toilets and sewers the large lumbricoid nematode is of less importance in public health. But such is not the case in our gregarious food producers. The fact that wars and international upsets have interrupted the production of santonin and sometimes raised the price above the economic limitations of veterinary medicine does not change its medicinal value.

Turpentine.—As a drug, oleum terebinthinae is out in the revision. Many veterinarians will regret that deletion, since this common article of the paint store has many uses in animal medicine. Its carminative, antifermentive action on the long alimentary canal of large herbivous animals is not excelled by any other drug, according to the observations of many practitioners, and it has a remarkable diffusibility to carry its stimulating action into every nook. Though harsh on the kidneys in repeated doses, single large doses are harmless. In acute catastrophes from overloading the digestive tract, it has value that justifies its retention in the official category.

Guaiacol, Creosote.—Perhaps many veterinarians will be amazed at the exclusion of guaiacol, which the Committee on Revision pronounces worthless in the rôle for which it has been so extensively used in veterinary practice. "It is neither antiseptic nor expectorant," the Committee declares. This fact has already dawned upon many practitioners who prescribed guaiacol and creosote products for hogs and horses affected with respiratory infections. Guaiacol was introduced into veterinary practice by Quitman, who recommended it as useful for its local action in obstructive laryngitis of horses. The claim was that it relieved "edema of the glottis." This evaluation and its use in human pulmon-

ary tuberculosis were the bases for its extended use without reasonable bourn in animals. Since swine must be treated collectively through the medium of the feed, and guaiacol is not edible, salts of the distillate were largely substituted. Whatever clinical evidence has piled up in its favor among swine practitioners, we leave for them to say. In this review of the U. S. P. revision we may be trekking upon controversial ground in casting doubt upon the medicinal value of a drug that has been used by the carload for a long while.

Cannabis.—This galenical is banished for unreliability and its habit-forming property. In veterinary medicine, before it came under federal supervision, we believe that its use as a narcotic analgesic was never really justified. Overrated, unnecessary, erratic, are properties belonging to it. Its deletion is a good riddance.

Quinine.—Quinine is omitted because salts of the alkaloid have largely replaced it. Its parent drug, cinchona, being no longer used in malaria, and better bitters now being available, goes out for these reasons.

Potassium Chlorate.—Once a favorite in laryngo-pharyngeal inflammations, it is said to have no medicinal value for either local or general purposes.

Sweet Spirits of Nitre.—Once popular in the treatment of equine colics, this drug has long since passed to the veterinarians' *oubliette.* Many of us have wondered why it was retained in the U. S. P. all of these years.

Pepsin.—This is pronounced a powerful but useless enzyme because the pH at which it acts best (1.5 to 2.5) can not be obtained by any acid the patient can swallow.

U. S. P. HISTORY

The United States Pharmacopoeia, born in 1820, represents the high type of medicine and pharmacy developed in this country through self-regulation — through the obedience of codes which, in effect, are actually statutes of the realm. This book of the doctors and druggists is, therefore, "the law of the land" in matters appertaining to medicinal standards. Its standards are recognized as legal by the national and state governments and also by some of the other American republics. The U. S. P. is quite Pan American. Its publication since more than a century ago was first conceived by medical societies, and its continuation and contents were governed by voluntarily convened conventions sponsored in both fields.

In the history of the U. S. P. one finds such sponsors as "Medical Colleges and Societies" (1820); "General Convention for the Foundation of the American Pharmacopoeia" (1830); "National Medical Convention" (1831); "National Convention for Revising the Pharmacopoeia" (1850); and "United States Pharmaceutical Convention" (1905), which now supervises the publication of the decennial issues. The master minds of this American codex in recent decades have come from the American Pharmaceutical and the American Medical associations. The veterinary profession was taken into the pharmacopoeia councils in 1940 when R. L. Mundhenk, then of Alabama Polytechnic Institute, and H. E. Moskey of the Food and Drug Administration, appointed by President Wight of the American Veterinary Medical Association, were received on the revision committee as the legal representatives of veterinary medicine.

New Regional Society

When veterinarians, most of them officials, met at Sioux City, Iowa, September 3, 1941, to discuss leading questions, they passed a resolution recommending the founding of a new regional veterinary-medical society. Name: The North Central States Veterinary Conference. An organizing committee was appointed by H. A. Seidell, then the chief veterinarian of Iowa. Delegates representing Iowa, Minnesota, North and South Dakota, Nebraska, Kansas and Missouri were present. [*Vide*, page 520.]

Food to preserve life and guns to destroy it are the main concerns of mankind in 1941.

CURRENT LITERATURE

ABSTRACTS

Brucellosis

After the study of brucellosis began at Dayton (Ohio) in 1928, 90 cases were recognized in 18 months. By 1930, the disease was pronounced a major public health problem. The developments of the past ten years justify the author's early predictions, which were greeted with skepticism before the passage of a universal pasteurization ordinance. Of 220 cases studied, all but 24 occurred before the ordinance was passed and enforced.

Undulant fever was first seen in the United States in 1899 in persons returning from the tropics. Graig recognized the disease in American soldiers in the Philippines in 1905. Minor outbreaks occurred in the goat-raising regions of the Southwest in 1911 and 1913, but all was forgotten until 1922, when a startling epidemic of it occurred in Arizona. In 1918, Alice Evans of the U. S. Bureau of Animal Industry proved that the organism of undulant (Malta) fever and that of contagious abortion of cattle were indistinguishable and, in 1927, Carpenter isolated Bang's bacillus in the blood of ten human cases.

The work of Traum in California, of Huddleson in Michigan and of Hardy in Iowa established the facts as to the intertransmissibility of animal and human strains of the infecting agent. Hardy reported 1,669 cases in Iowa in ten years. In 1940, the U. S. Public Health Service reported officially on 3,358 cases gathered from state health departments.

Physicians have arrived at tardy diagnoses after slowly excluding typhoid fever, malaria, tuberculosis and influenza, and occasionally the disease has been confounded with acute rheumatic fever, subacute endocarditis, bronchitis, pyelitis, appendicitis, cholecyatitis or tularemia. Obviously, therefore, the incidence of brucellosis is higher than the records show.

The symptomatology of old text books, based upon the goat infection, will not answer. Although there is a fairly constant syndrome attached to the acute form (intermittent fever, chills, sweats, headache, backache, joint pains, etc.), the chronic type, or mild ambulatory case, presents a different variety of symptoms. The symptoms of the acute and chronic forms are described in details too lengthy for this space. Animal inoculation, brucellergen (Huddleson), and other tests are evaluated. Cultivation and identification of the organism are, however, required to establish a complete diagnosis. The technics of the cultivation employed are related.

The mortality in the reported cases was about 2 per cent. During 1936, there were 107 deaths from brucellosis officially reported in the United States. The campaign against the disease in animals conducted by the federal and state governments is termed "laudable." Of the million and a half cattle tested, approximately 5.5 per cent gave positive reactions. The author regrets that a similar campaign is not waged in hogs and goats. The hope lies in pasteurization of milk. Although serum and vaccine therapy have been improved, there is no assurance of their effectiveness. Reports on chemotherapy are based on numbers too limited to be conclusive. The value of sulfanilamide is undetermined. [*Simpson, Walter M. Brucellosis. Bulletin of the New York Academy of Medicine (Aug. 1941), pp. 592-617.*]

Human Equine Encephalomyelitis

The occurrence of equine encephalomyelitis in man was suspected in 1932 by Karl F. Meyer when the disease was found in three persons during an outbreak among horses in Kern county, California, following the isolation of the causative virus in the brain tissue of horses by Meyer, Haring and Howitt in 1930.

In the outbreak of poliomyelitis last year, an unexpectedly high proportion of cases proved to be of the equine encephalomyelitis type and a smaller number of the St. Louis type. A few cases were not specifically diagnosed. Neutralization tests with the western strain were used to make the differentiations. Although new knowledge on the subject has accumulated rapidly, unsolved problems remain.

The recurrence of cases in successive years shows spotty distribution. Neither direct nor indirect contact could be incriminated, but occurrence in warm weather points to insect vectors as the medium of transmission. Four cases in infants are described to support that contention. The ages of the patients investigated during three years, however, ranged from 3 weeks to 66 years. Males predominated. The incidence was manifestly endemic. A table

lists 112 tested cases (human), of which 97 (86.6%) were of encephalomyelitic infection, and 82 tested cases, of which 5 (6%) were of poliomyelitic infection. [*Buss, William C., M.D., C.P.H., and Howitt, Beatrice F., Kern County Health Department and George Williams Hooper Foundation, University of California Medical Center, San Francisco. American Journal of Public Health, xxxi (Sept. 1941), pp. 935-944.*]

Dual-Type Gun Dogs

There are gun dogs bred exclusively for show purposes and another type for field work. The question of breeding a dual-type has been widely debated among fanciers. The sportsman would appreciate good looks, provided it were associated with superior working qualities. A solution of the question would be beneficial to breeders, sportsmen and show-giving kennel clubs. A dog-show enthusiast can be created overnight by merely proving that his dog holds its own in show competition, notwithstanding that the winner would be a complete dud in the field. In short, breeding for shows creates changes in appearance until gun dogs are made "beautiful but dumb." The points which make for utility have receded, and until show judges rule that the winning dog must be the one most suitable for the field, there can be no suitable dual-purpose gun dog satisfactory to the practical sportsman. The author suggests plans for qualifying gun dogs for show purposes. [*Daw, William F. Why Not Try the Laverack Plan? American Kennel Gazette, lviii (Oct. 1941), pp. 11-13.*]

Shortage of Fats and Oils

With the lard surpluses staring American farmers in the face for some years, a thesis on fat shortage would seem to be unnecessarily disquieting were it not for the fact that with imported vegetable oils off the market, that very thing can happen, fortunate as we are in being well supplied with edible fats.

We import hundreds of millions of pounds of vegetable oils, about one third of which is used for human consumption on account of preference or economic advantage. The importations are not actually needed, since our output of butter and lard and cottonseed, soybean and other oils is sufficient. The crux lies in the immense amount of foreign oils used in the industries for which there is no domestic substitute (tung, castor, palm, babassu, coconut, *et al.*). Owing to anticipated shortages there has been talk of stocking up before the supply is shut off, and the industries raid the supply of edible oils. [*McBride, G. W., chemical engineer, Washington, D. C. Food Industries, xiii (Apr. 1941), pp. 46-47.*]

Preventive Medicine Not Without Danger

Complete success of preventive medicine may not be a complete blessing. Contagious diseases of the young create a resistance in the adult that may continue into the next generation. Groups not so protected are vulnerable when such contagions come along. Moreover, when the incidence of a disease as a result of such protective measures as toxoid vaccination against diphtheria is lowered, it will be increasingly difficult to persuade people to continue vaccination and thus develop an unprotected generation. Indifference toward smallpox vaccination has increased with the passing of its terrors. Contrary to these forebodings, however, is leprosy. Though many generations removed from the days of its high incidence, leprosy remains sporadic. Tuberculosis in military camps is cited also as a comparable criterion.* [*Editorial, Medical Times, lxix (Oct. 1941), pp. 417-418.*]

The Incidence of Tuberculous Lesions in Man

The presence of tuberculous lesions found *post mortem* in man, indicating the incidence of tuberculosis in the general population, has been the subject of numerous investigations to supplement the facts acquired by x-ray examinations and tuberculin tests of school children and adult groups.

Published reports have placed the prevalence of the disease at 93 per cent in persons aged 18 years and over. In fact, by the turn of the century it was generally accepted that practically all adults bear marks of tuberculous infection, either healed or active. The figures are, however, confusing since among the many authors the autopsy technics, classification of fibrous lesions, and diligence of search varied greatly. Thus, percentage figures range all the way from 18 to almost 100. Moreover, some of the reports antedate the general decline in the tuberculous morbidity, *i.e.*, the morbidity dropped from 200 per 100,000 in 1900 to about 50 per 100,000 during the last few years. The present investigation* also shows that the mortality (for all infected persons) has been reduced from 2 to 2.8 per 1,000 to 1 to 1.4 per 1,000 during the same period. Credit for the reduced mortality goes to improved methods of treatment, but particularly to "reduction of the sources of infection." [Obviously, the removal of tuberculous animals in large numbers has been a contributory factor.—Ed.] [*Landé, Kurt E., and Wolff, Georg. Frequency of Tuberculous Infection at Autopsy. The American Review of Tuberculosis, xliv (Aug. 1941), pp. 232-239.*]

*Conducted at the Washington County Hospital, Hagerstown, Md., by the authors and the Division of Public Health Methods, U. S. Public Health Service.

Milk Strikes

The cause of milk strikes is reviewed and remedies proposed. Among the causes named for the strikes of the past 25 years in New York, of which there have been six, are (1) drouths, (2) labor shortage, (3) dissatisfaction over regulations, (4) low prices (5) widely publicized success of labor strikes. The remedies are (1) to adjust prices of fluid milk to production costs, not to the cost of butter, (2) quicker adjustment of milk prices when costs of feed and labor rise, (3) revise the present classified-price system, (4) pay farmers twice a month so that they will know the net prices they are going to be allowed and (5) admit the farmers' right to strike for fair and prompt adjustment of their grievances. [*Spencer, Leland. Plan to Stop Milk Strikes. Hoard's Dairyman, lxxxvi (Sept. 10, 1941), p. 523.*]

Deferred Milking in Bovine Mastitis

Deferred milking (three days) in lieu of frequent milking of cows affected with acute, parenchymatous mastitis is described. The treatment was not tried in cases of mastitis due to hemolytic streptococci, *Corynebacterium pyogenes* or staphylococci. The presence of streptococci should first be determined by means of laboratory tests. Judging from the small reduction of milk secretion following, deferred milking is not harmful to the secretory tissues unless milking is delayed more than three days (Maeder and Astwood. 1922). The report covers 16 cases, two of which are described.

Cow A, previously treated by repeated milking and the administration of sulfanilamide (700 gr. per day for three days) relapsed during four weeks after each treatment. Following a relapse, deferred milking for three days was tried. The swelling disappeared in three days. The appearance of the milk became normal three days later and, although the quarter was not secreting as much as the others, this cow was back to normal production. In a month the fibrous areas had softened and but few, if any, streptococci were being shed. When the cow freshened again she had an evenly balanced udder and did not shed streptococci. Comparable results were obtained in the other case (cow B) described and in ten other cases. The conclusion was that discontinuing milking, rather than repeated milkings, has value in the treatment of streptococcal parenchymatous mastitis, but is of no value in the catarrhal form or when the treatment is delayed. [*Pounden, W. D., D.V.M., M.S. Deferred Milking—A Method of Handling Acute Streptococcal Mastitis Cases. The Cornell Veterinarian, xxxi (Oct. 1941), pp. 339-344.*]

Menstruation in Mammals

The menstruation period of the human female is exceptionally long. Though closely associated with estrus, ovulation occurs about half way between the periods. As the premenstrual congestion takes place, the endometrium becomes several times thicker than normal, and the other genital organs share in vascular engorgement. The blood is a seepage of the congestion due to rupture of the superficial vessels. Although there may be a certain amount of menstruation following fertilization, the process is a sign that fertilization from the previous ovulation has not taken place.

The bitch has a pronounced menstruation, lasting about ten days, and will not, as a rule, mate until the bleeding ceases. In the mare the event is not generally noticeable. The ewe menstruates but little and shows no external signs of proestrus, and neither does the sow.

Cows menstruate about two days after estrus, about 24 to 48 hours after heat subsides (Williams, W. L.) and, generally, fertilization inhibits it, but absence or presence of menstruation must not be accepted as proof of conception or failure to conceive.

The belief that visible menstruation after service indicates that conception has not taken place was studied in the cows and heifers of the University of Nebraska dairy herd from 1937 to 1940. A group of 100 cows and 100 heifers was studied. Observations which were made at regular intervals each day for five days after estrus indicated that there was no definite relationship between breeding and conception as these affect menstruation. [*Thimberger, G. W. Menstruation Frequency and Its Relations to Conception in Dairy Cattle. Journal of Dairy Science, xxiv (Sept. 1941), pp. 819-823.*]

Fuadin in Japanese Schistosomiasis

Fuadin, popular heartworm remedy in dogs, in doses of 40 cc. for human adults weighing 60 kg. (130 lb.), gave favorable results in 10 out of 19 patients suffering from Asiatic schistosomiasis,* comparable with those obtained at the Research Institute of Public Health of Egypt since 1934. Of the 10 persons not cured, two were advanced cases. The dose should be regulated according to the patients' ability to retain the drug in the body for a considerable length of time, not according to age or body weight, as recommended by the Egyptian workers. Failures to cure are attributed to liver damage beyond repair. [*Tubangui, M. A., and Aguila, P. J. The Treatment of Schistosomiasis Japonica with Fuadin. Philippine Journal of Science, lxxv (May 1941), pp. 69-73.*]

*Asiatic or Japanese schistosomiasis is a trematode infection; also called bilharziasis.

BOOK NOTICES

The Political Life of the AMA

This book is a barrage of explosives, *sans borne*, obviously laid down to catch, red handed, the "active minority" of the American Medical Association which less polite writers on social groups have called "the click." The subject is organized in medical fashion. The body politic of the AMA is vivisected into five chapters: (1) Political Morphology, (2) Political Histology, (3) Political Physiology, (4) Political Pathology, and (5) Political Ecology. Although not so named, there are scatterings of political pharmacology, also.

The material was gathered at many places, including the workshop of the criticized, whom the author sets out to scorch with criticism without giving much credit for compensatory achievement.

Readers unaware will wonder why such a book was written about the national medical society. The theme is *savoir faire*, not *fait accompli:* methods not results. When *result* can step out and give a good account of itself, the lambasting of *method* loses power and caste. Someone, somehow, has built up an American medical profession, and inasmuch as the AMA has drawn the cream and the lion's share of physicians into its membership, it must have had something on the ball all the time, even though its politics may be as bad as the author says.

The story recalls Pershing's chase of Pancho Villa with Morris Fishbein and his lieutenants as the villians to be captured. The difference is that Villa's command dwindled and Fishbein's grew to an unprecedented legion — a legion of America's best physicians and a majority of them, all engaged in advancing medical science, improving medical education, fighting cults and quacks, and making better hospitals where an American can go without getting lousy. Besides, there is the longtime coöperation with the public health services of the federal government and states and the medical departments of the Army and Navy. But the author pulls no punches. Achievements are hidden, faults magnified, without considering the difficulties of society work in a country of our pattern and size. The wonder is that so much sour grapes and jealousy can be camouflaged in that many pages. Kind words of encouragement for the ambitious physicians to take active part in county, state and national medical societies are generally absent. "They devote themselves to medical politics," is one of the strokes of the author's brush. "Fishbein finds ways of enlarging his income," some play for consultation practice *via* the medical society route, while others merely enjoy the thrill of holding office and of presiding over those of greater repute. If half of what the author says were true, American physicians certainly would be a selfish lot and the aggregate of canny groups bent on providing jobs for a chosen few. Physicians will, however, be gratified to be informed that there are "useful and industrious office seekers in some of the medical societies."

The book is not all critical. A remedy is proposed for the ailments of organized medicine. More, rather than less, politics is prescribed, but how to accomplish this utopia in organized medicine is not clear *vis à vis* the "indifference and inertia" signalized as the root of all evils throughout the book. If more politics means anything else than more active interest on the part of the rank and file, the author's silence in that detail needs explanation. As a matter of fact, if the AVMA, a 78-year-old society which developed parallel with the AMA, may be taken for comparison, the remedy prescribed may never become available. The two ailments—indifference and inertia—are not easily cured. They are too general, too chronic and too willingly tolerated to be cured by the stroke of the pen. "They (the members) would rather leave it to others," as the author confesses, about tells the whole story of this attack on the AMA. [*The Political Life of the American Medical Association. By Oliver Garceau, Department of Government, Harvard University. 186 pages. 14 charts. 9 tables. Harvard University Press, 1941.*]

Laboratory Animal Cages

A multigram of 14 pages plus 7 pages of pictures and drawings showing precise specifications for the cages used to house laboratory animals should be of considerable interest to many in these days of experimental medicine, in view of the lack of uniformity in this part of laboratory equipment, as regards types, doors, frames, latches, pans, welding, material, bedding, water and feed containers, portability, etc., etc., which go to make up cages suitable for breeding, raising and handling of the small animals of the modern laboratory. Cages for guinea pigs, ferrets and rabbits are described in every detail needed by the contractor and blue-print reader. [*Laboratory Animal Cages. By C. W. McIntosh, animal pathologist, Animal Disease Research Institute, Dominion Department of Agriculture, Ottawa, Ont. 21 pages, 11" x 8". 13 figures.*]

Biologic Aspects of Infectious Diseases

The author who starts forthwith to underwrite the neglect of biology since the coming of Koch and Pasteur is certainly keeping step with the march of modern pathology. In veterinary science alone, the tattered term "up-to-date" is but feeble emphasis for a book setting out to remind medical science of its miscalculations when it left general biology stranded in its hunt for microbes. Fascinated with their eventful discoveries, pathologists have not stopped to clear up the fog of associated biologic problems as they explored the field that had baffled the ancient, medieval and early modern physicians. Just where the bacteria they discovered fitted into the scheme of living things did not trouble the medically bent mind. The aid of the chemist, botanist and biologist was not invoked until the student of plant and animal life became a professional biologist, and a worker in the field of infectious diseases, the ever-present limiting factor of abundant animal life along with old age, accidents, predatory enemies and lack of food.

Chapter I, "Ecological Point of View," is a reminder that the leveling effect of infectious diseases among the gregarious creatures of the earth interested but few pathologists, although therein may lie the answer to the coming and going of grave catastrophes which have come upon man and animals in all historical times. Although obviously not so intended, the chapter is a fundamental lesson in animal production, agriculture and veterinary medicine.

"The Evolution of Infection and Defense" (Chapter II) tells the story of infection as the biologist sees it. The engulfing ameba, for example, makes its own stomach when hungry, but it may swallow parasites that will gnaw at the very stomach that tries to devour them. That, in a word, is infection, multiplied in higher life by the multicellular make-up. Physiology was Metchnikoff's guide in propounding the theory of the englobing phagocyte. The potential food of an organism is another organism.

Chapters III, IV and V are studies of bacteria, protozoa and viruses, respectively, dwelling upon the factual generalities required to elucidate the subject rather than upon the orthodoxy of pathologic bacteriology.

While the biologic position of viruses in nature is left for the future to decide, this book holds firmly to the axiom that, like all living matter, viruses are derived only from identical types. Whether viruses, like genes, are parasites of cells to which they were once useful, whether they are fragments of infected cytoplasm or non-living crystals capable of becoming alive and reproductive, are not seriously entertained.

Chapters VI through X are entitled "The Normal Defenses Against Bacterial Infections," "The Chemical Basis of Immunity," "The Development of Immunity after Infectious Diseases," "The Wider Significance of Immunity," and "What Makes Bacteria Dangerous?" These are chapters of refreshing material.

Immunity is chemical, although synthesis of the antibody has not been accomplished. Its chemical nature is proved in test-tube work on neutralization. Fever turns to convalescence through chemical changes in the patient, not through any changes in the invading organism, and immunity endures as long as the chemical holds forth.

Chapters XI through XIII are entitled, respectively, "How Infections Spread," "The Transfer of Infection from One Species to Another," and "The General Character of Epidemics and Prevalences of Infectious Disease."

Throughout, this book is loaded with literary gems and constructive philosophy which will not only entertain but edify anyone concerned about man's greatest curse—infectious diseases. Open it anywhere for a few moments of relaxation, whatever may be your rating in the scientific or social whirl. [*Biological Aspects of Infectious Diseases. By F. M. Burnet, M.D. 310 pages. The Macmillan Company, New York. 1940. Price $3.75.*]

The Nervous Diseases of Cattle

The book consists of two main parts. The first part deals with the anatomy and physiology of the nervous system of the ox. It describes in detail the methods of examination as compared with or differing from the methods employed in human neurology. The second, and larger, part describes the nervous diseases of cattle, giving causes, symptoms, macroscopic and microscopic pathology, prognosis, comparison with identical or similar diseases in the other domestic animals and in man, and treatment where such is known.

The difficult subject matter has been admirably handled by the two authors (a physician and a veterinarian). The book should be of primary interest to veterinary physiologists. It also would be a great aid to the large animal practitioner in arriving at a correct diagnosis in many obscure cases.

We have little definite information concerning nervous diseases in cattle, and although this work by no means professes to give the complete answers to this complicated question, it offers some logical deductions and should stimulate further investigation in the field of veterinary neurology.

The work contains photographs, drawings, roentgenograms and color plates showing microscopic subjects.

In other words, the book is exactly as indicated in its subtitle, "a basis for a comparative

neurology of man and domestic animals." [*Die Nervenkrankheiten des Rindes. By Dr. Med. E. Frauchiger, docent in comparative neurology, and Dr. med. vet. W. Hofmann, professor in diseases of cattle, University of Bern, Switzerland. 361, 6½" x 9½" pages with 147 illustrations. Hans Huber Publishing Company, Bern, Switzerland. Price Fr. 24:00; RM. 14.40.*]

America

"America" is the name of a brochure received for review. It treats of a subject—the war—that is uppermost in everyone's mind in such a way as to shape public opinion through these dark pages of American history. Propaganda, as popularly defined, is the evident object of the author. Yet, the unexaggerated facts set down about our industries and government are criticisms that are easier to forget than to contradict. Because of these failings and faults, the younger generation hold their elders in contempt.

Our mismanaged system of business and finance has led to profiteering, graft, Tea Pot Dome and the crisis of '29. Since the first World War (quoting), "Millions of workers, farmers, sharecroppers, and migrants have suffered hunger, disease, and despair in the richest country of the world." Yet, if this was the cost of freedom, the terror of the "Nazi boot" has not been felt. We are having our troubles with the "liberty, fraternity, equality" of the French and American revolutions, but the price was not high compared with the threat of Nazi aggression. And, there are no failings in retrospect or prospect that managed democracy can not cure when an aroused people sets out to do so.

America reminds the reader that we are natives of all the world, not preponderantly of any one origin. Whatever this may signify in an all-out battle for existence comparable to Thermopylae (480 B.C.), there is a comradeship among Americans that none may discount. Note the names of the New York Yankees: DiMaggio, Henrich, Rizzuto, Rosar, Russo, Dickey, Selkirk, Rolfe, Keller, Gordon, Priddy, taken from the line-up of one game.

A list of radio electricians in the United States Navy has Schmidt, Recksick, Bergerich, Finnigan, Dufrense, Almour, Desrosiers, Wiegand, Adams, Ripley, Booth, Swint.

In one group of American fliers on the RAF are Bono, Kolendroski, McGinnis, Olson, Provenzano, Luczkow, LaGuardia, Peterson, Moore, Satterlee, Bateman, Whitehead, Allen, Mauriello and Mamedoff.

To presume that these names do not symbolize American unity is a bad guess, a guess as bad as having envisaged a fifth column in the line-up of the Brooklyn Dodgers. These lists express American unity in National Defense. [*America. By David Cushman Doyle. Ninety-one 6" x 4" pages. Cloth. National Home Library Foundation, Washington, D. C. Price not stated.*]

Horse and Mule Power

A brochure, entitled *Horse and Mule Power in American Agriculture*, contains the salient facts on the subject: breeding, feeding, management, handling, harnessing, hitching, and its economics. In respect to the latter, we quote: "The decrease of horses and mules since January 1, 1920, 11 million in all, has forced nearly 44 million acres which formerly produced feed for horses into the production of surplus products, such as grains and meat animals, which must be sold on the open market. This is more than the acreage required to produce our exports of wheat, corn, rye, barley and oats, even in the years of exports since 1920. It [the 44 million acres] would have produced all the cotton marketed in 1938, with 18 million acres left over . . . and it is more than the total acreage of all harvested crops in 1929 in Tennessee, North and South Carolina, Georgia, Alabama and Mississippi."

Besides the well-chosen reasons for returning horse power to American agriculture, the brochure represents a great deal of study and research on the mechanics of horse farming and its proper utilization. In regard to multiple hitches, the book is a masterpiece that is certainly indispensable to those employing that type of power in farming. [*Horse and Mule Power in Agriculture. By Wayne Dinsmore. 71 pages. Illustrated. Paper. Horse and Mule Association of America, Chicago, 1941. Price not stated.*]

Plants Useful in Upland Wildlife Management

Wildlife management requires certain plants and trees for coverts and homes frequented by animals. Whether on farms or preserves, wildlife needs shelter and food. These requirements the author describes for different parts of the United States where many uncultivated acres exist to no good purpose unless wisely handled to allow wildlife to thrive and multiply. Management that will provide shelter and food and water through the year is pointed out as necessary to be successful. The needs of quail, pheasants, grouse and songbirds and of squirrels, rabbits, opossums and even bears, deer and elk are listed The groups comprised cover plants, browse plants, herbage, fruit and seed producers, grains and nuts, patches of which may be raised where circumstances and desires warrant. In preserves, the raising of the right plants is essential. [*Conservation Bulletin No. 7, U. S. Department of the Interior, Fish and Wildlife Service, Government Printing Office, 1941. Price 10 cents.*]

THE NEWS

Student Enrollment for the Academic Year 1941-42

School	Fresh.	Soph.	Jun.	Sen.	Spec.*	Grad.	Total	1940-41	Change
Alabama Polytechnic Institute	58	53	64	59	2	2	238	239	— 1
Colorado State College	45	41	33	44	0	1	164	158	+ 6
Cornell University	42	37	37	43	1	10	170	162†	+ 8
Iowa State College	64	67	58	56	0	9	254	245	+ 9
Kansas State College	60	57	46	53	0	0	216	226	—10
Michigan State College	62	57	53	67	0	5	244	239	+ 5
Montreal, University of	15	7	5	19	0	0	46	38	+ 8
Ohio State University	66	60	65	53	1	5	250	242	+ 8
Ontario Veterinary College	42	18	51	58	0	0	169	211	—42
Pennsylvania, University of	50	49	49	41	3	0	192	191	+ 1
Texas A & M College	90	95	82	56	2	1	326	315	+11
Washington, State College of	40	38	32	42	0	0	152	161	— 9
Totals (1941-42)	634	579	575	591	9	33	2,421	2,427	— 6
Totals (1940-41)	613	638	578	585	12	1	2,427	2,472‡	—45

*Figures do not include pre-veterinary students.

†After the figures for 1940-41 were published in the December 1940 issue of the JOURNAL, Cornell University reported an additional enrollment of eleven students. To avoid complicating the records, and inasmuch as other colleges undoubtedly also had slight changes in enrollment following the time they furnished figures for publication last year, the 1940-41 figure for Cornell has not been changed.

‡Total number of students for 1939-40.

A study of the above table shows that the enrollment in the twelve recognized veterinary colleges of the United States and Canada is smaller by six than in the preceding academic year.

The decline, however, does not point to lack of interest in a veterinary career; it is traceable directly to the war situation which has compelled Canada to call large numbers of students into military service, thereby decreasing enrollment at the Ontario Veterinary College by 42 regular students as compared with the past academic year.

In the table below, the regular enrollment (freshmen, sophomores, juniors and seniors) for the decade 1932-33 to 1941-42 is given.

Enrollment of Regular Students for the Ten-Year Period 1932-33 to 1941-42

Academic Year	Enrollment
1932-33	1,401
1933-34	1,370
1934-35	1,568
1935-36	1,810
1936-37	1,927
1937-38	2,170
1938-39	2,339
1939-40	2,409
1940-41	2,414
1941-42	2,380

AVMA ACTIVITIES

AVMA to Help Procure Veterinary Defense Personnel

On October 31, President Roosevelt approved an order to establish a procurement and assignment service for physicians, dentists and veterinarians and placed its administration under Federal Security Administrator Paul V. McNutt in the Office of Defense Health and Welfare Services.

The functions of the new procurement and assignment service include (1) procurement of medical, dental and veterinary personnel for needs of the emergency and (2) the maintenance of these professional services for civilian defense and for all civilian needs.

The agency is to function under the guidance of a board of five members, headed by Frank H. Lahey of Boston, president of the American Medical Association. At a meeting in Washington on November 7, the board established subcommittees to consider problems and interests of hospitals, industrial health, medical education, veterinarians and veterinary services, dentistry, public health, Negro physi-

cians and women physicians. A committee on information was formed to advise the various professions concerned as to the needs for additional personnel in each field to meet the requirements of the military forces and civilian needs.

The veterinary subcommittee appointed consists of five members: W. A. Hagan, dean of the New York State Veterinary College; John R. Mohler, chief of the U. S. Bureau of Animal Industry; H. W. Jakeman, president of the AVMA; Cassius Way, practitioner of New York City; and J. G. Hardenbergh, executive secretary of the AVMA, who will serve as chairman.

The principal office of the procurement and assignment service will be in Washington as a part of the Office of Defense Health and Welfare Services. Regional offices will be established in Chicago, where the headquarters of the American Medical, American Dental and American Veterinary Medical associations are located and where complete rosters of the members of these professions and their qualifications will be available.

VETERINARIANS SOON TO BE SURVEYED

A survey form for veterinarians is now being prepared which is designed to provide information valuable not only for the present emergency, but also for the future. The American Medical Association has been working for several months through its Committee on Medical Preparedness and has already gone far in cataloging some 170,000 physicians. The veterinary profession has a vital contribution to make in the defense program and the wholehearted support of every veterinarian is needed in the forthcoming survey.

The Coming San Francisco Convention

"Lives there a man with soul so dead who never to himself has said . . . let's go to California?"

The urge to visit the Pacific Coast is a chronic neurosis of the American people. It's an incurable hanker dating back to the historic quest of '49, when California, for all time, became the cynosure of all eyes and started the instreaming hegira everyone hopes to join, sooner or later, whenever opportunity permits. Opportunity has arrived.

The notion of making the journey to the California meeting for the 1942 vacation is already a common topic of conversation in many a family circle. Because such a vacation will write unforgettable pages into the family biography, the idea has promising results. Sights unparalleled in the wide world and pleasure galore that words can not exaggerate will be the compensation.

Since various plans for the journey and for the meeting itself are in the make-up stage, only vague generalities can be dwelt upon in this issue.

The objective is the largest meeting of veterinarians ever assembled on the Pacific Coast brought about by the natural and man-made features of the occasion.

There will be a special train or group of Pullmans (out of Chicago) with well-chosen programs of entertainment and side trips, if W. J. Embree, transport expert of the veterinary realm, can mobilize the necessary crowd, and this, we believe, he can and will do.

For those who prefer the cement highways threading the American landscape in every direction, seven transcontinental routes skirting farms, cities, towns, plains, deserts, ranches, mountains, rivers and canyons are inviting paths for the family auto. The circuit will be as easy as the ride to church on Sunday morning, with the difference that you get a close view of physical U.S.A. and its cosmopolitan population thrown in.

Expensive? Well, about as expensive as staying at home and not as costly as summer hotels by the sea or rented cabins on the fresh-water lakes. The highways to California from wherever you start are studded with friendly hotels and tourist cabins run by folks who greet the transient with as cheerful a how-do-you-do as if you were coming back every day—the greeting and fair play and inexpensive living that have made the West a popular place to take vacations.

APPLICATIONS

First Listing*

BAGLINA, A.
Casilla 537, Santiago, Chile.
M.V., Universidad de Chile, 1940.
Vouchers: Balbino Sanz and Julio San Miguel.

BLANK, LEE A.
2611 Agatite Ave., Chicago, Ill.
D.V.M., Chicago Veterinary College, 1916.
Vouchers: E. M. Lynn and L. A. Merillat.

CANTO, J.
Casilla 16, Puerto Aysen, Chile.
M.V., Universidad de Chile, 1938.
Vouchers: Balbino Sanz and Julio San Miguel.

CORNEJO, MARIO
Echaurren 429, Santiago, Chile.
M.V., Universidad de Chile, 1934.
Vouchers: Balbino Sanz and Julio San Miguel.

ESCHENBACHER, ALBERT B.
Stockyard Station, Denver, Colo.
D.V.M., Kansas City Veterinary College, 1913.
Vouchers: R. M. Gow and E. Heiny.

*See July 1941 issue, p. 74.

FINCH, DELL C.
3235 Gough St., San Francisco, Calif.
D.V.M., State College of Washington, 1938.
Vouchers: Frank A. Lucich and T. R. Myers.

GILMORE, JAMES W.
1622 Oxford St., Berkeley, Calif.
D.V.M., Iowa State College, 1941.
Vouchers: J. W. Roberts and F. H. McNair.

INMAN, MARVIN L.
3024 Baker St., San Francisco, Calif.
D.V.M., Texas A & M College, 1941.
Vouchers: P. H. Hand and T. E. Head.

LEIGH, L.
Barros Arana 970, San Bernardo, Chile.
M.V., Universidad de Chile, 1936.
Vouchers: Balbino Sanz and Julio San Miguel.

ROSS, S. M.
1828 E. Third St., Williamsport, Pa.
V.M.D., University of Pennsylvania, 1934.
Vouchers: William J. Lentz and Frederick H. Schneider.

Second Listing

Docksteader, D., Chesterville, Ont.

Dunn, J., Box 92, Elmvale, Ont.

Foulk, Chas. C., 1124 Harney St., Omaha, Neb.

Harris, Fred M., 72 - 3rd Ave., San Mateo, Calif.

Keneley, Frank, 738 S. Greenleaf Ave., Whittier, Calif.

Maguire, Frank G., 12 Main St., Monson, Mass.

Mark, James H., Chestnut Hill Road, Litchfield, Conn.

Midwinter-Steane, F., 934 Queen St., E., Sault Ste. Marie, Ont.

Murty, B. C., Parkston, S. Dak.

Ogburn, Leonard Love, 1310½ Montana St., Los Angeles, Calif.

Pickett, George G., 1189 Barnum Ave., Stratford, Conn.

Roy, Peter S., Atlantic Blvd. Veterinary Hospital, 4001 Atlantic Blvd., Jacksonville, Fla.

Soave, A. C., 5666 Telegraph Ave., Oakland, Calif.

Tietze, A. L., Jr., 1437 Riverside Drive, Los Angeles, Calif.

Topmiller, A. C., 530 W. Main St., Murfreesboro, Tenn.

Tubis, Philip S., 470 McLean Blvd., Paterson, N. J.

Turver, John, 1201 E. 12th St., Oakland, Calif.

Willmore, J. H., Rt. 1, Box 826, Mill Valley, Calif.

Dues notices are now being mailed. Please help to conserve the Association's finances by remitting without a second notice.

U. S. GOVERNMENT

Army Veterinary Service

Regular Army.—Captain Karl H. Willers is relieved from his assignment and duty at the General Dispensary, Washington, D. C., and from additional duty at Bolling Field, and the Army War College, effective on or about October 22, 1941, and is assigned to the Quartermaster Market Center, New York, N. Y.

Major Herbert M. Cox, upon his own application, is retired from active service, to take effect January 31, 1942. He is relieved from assignment and duty at Camp Shelby, Miss., on January 31, 1942, and at the proper time will proceed to his home.

Announcement is made of the temporary appointment of the following-named first lieutenants, Regular Army, to the grade of captain, Army of the United States, with rank from October 10, 1941: Harold Myers Deane, Edwin Joseph Sunderville, William Edward Bills and Harry John Robertson.

Veterinary Corps Reserve.—First Lieut. John E. Craige is relieved from assignment and duty with the station hospital, Fort Sam Houston, Texas, effective on or about October 20, 1941, and assigned to the ninth corps area laboratory, Presidio of Monterey, Calif.

Captain Gerald W. Holmberg is relieved from assignment and duty at the Quartermaster Market Center, Philadelphia, Pa., is assigned to the General Dispensary, United States Army, Washington, D. C., and to additional duty as attending veterinarian, Army War College, and Bolling Field, D. C.

Captain Joseph J. Merenda is relieved from his present assignment and duty at Fort Slocum, N. Y., and is assigned to headquarters, second corps area, Governors Island, N. Y.

First Lieut. James G. Anderson is relieved from assignment and duty at the New York Port of Embarkation, Brooklyn, N. Y., and is assigned to the second corps area service command with station at Fort Slocum, N. Y.

First Lieut. Thomas J. Guilfoil is relieved from his present assignment and duty at the Chicago Quartermaster Depot, Chicago, Ill., effective on or about November 1, 1941, and is assigned to headquarters, third corps area, Baltimore, Md.

First Lieut. Harold L. Geick is relieved from assignment and duty at the Chicago Quartermaster Depot, Chicago, Ill., effective on or about November 20, 1941, and is assigned to the General Dispensary, United States Army, Philadelphia, Pa.

The following veterinary reserve officers were ordered to extended active duty by the War Department during the month of October and assigned to stations indicated: First Lieut.

Albert Morris Zlotnick, Jersey City Quartermaster Depot, Jersey City, N. J.; Captain Fred J. Bolender, San Francisco Quartermaster Market Center, San Francisco, Calif.

Announcement is made of the promotion of the following Veterinary Corps Reserve officers, now on active duty, with date of rank indicated opposite their names:

From Captain to Major:
Captain Ashley J. Joyner, October 22.
From First Lieutenant to Captain:
Walter Alvin Anderson, November 1.
Pearl Hugh Hand, October 4.
Warren Lang Skinner, November 1.
Edwin James Smith, November 1.
Jon Alan McCurdy, November 1.
Wendell Lee Kanawyer, November 1.
James Howard Hathaway, November 1.
William Hyde Dieterick, November 1.
William S. Gochenour, October 14.
Roy Alonzo Resseguie, October 14.
William Russell Hulbush, November 1.
Ralph D. Barner, November 1.
Lee Roy Chapman, November 1.
James Durand Ramsey, November 1.
Alpheus Heise Seeley, November 1.
Henry J. Lindenstruth, October 21.
Robert H. Hartman, November 1.
Charles J. Whitehead, November 1.
Hilding M. Marlowe, October 25.
Emil L. Koch, October 25.
Russell S. Wann, October 25.
John E. Graige, October 23.
Harry A. Gorman, November 1.
Burton C. Thomson, November 1.
Horace R. Collins, November 1.

BAI Transfers

Harry L. Butler from Omaha, Neb., to New York, N. Y., on meat inspection.

Elmer M. Christopherson from St. Paul, Minn., to South St. Paul, Minn., on meat inspection.

Salvatore M. Dragotta from Chicago, Ill., to New York, N. Y., on meat inspection.

Frank A. Henney from Jefferson City, Mo., to Madison, Wis., on meat inspection.

Hal W. Tanner from Montgomery, Ala., to Nashville, Tenn., on Bang's disease.

Allan A. Vogel from Chicago, Ill., to Springfield, Mass., on meat inspection.

Paul H. Wallace from St. Louis, Mo., to Evansville, Ind., on meat inspection.

Homer A. Wilson from Frankfort, Ky., to Jefferson City, Mo.

John M. Wineinger from Des Moines, Iowa, to St. Paul, Minn., on tuberculosis eradication.

H. M. O'Rear from Washington, D. C., to Sacramento, Calif., in charge of tuberculosis, Bang's disease and scabies eradication.

Retirements.—Ira W. Eichelberger, Pittsburgh, Pa.; Walter E. Howe, Sacramento, Calif.; William H. Smith, Jr., Washington, D. C.; John H. Zollinger, Philadelphia, Pa.; Herman F. Arndt, Madison, Wis.

Greetings from Britain

During his recent sojourn in England, the following letter was received by Adolph Eichhorn [who returned to the United States several weeks ago] from President W. R. Wooldridge of the National Veterinary Medical Association of Great Britain and Ireland:

"It was a very great pleasure to me to have the opportunity of seeing you and of exchanging views upon the progress and development of our mutual profession in the world's two greatest Democracies. It is pleasing to learn that you in the United States of America are progressing in veterinary science and practice along lines similar to those which we are pursuing here. Perhaps one may take this as symptomatic of the closer understanding and co-operation which is fortunately developing much more generally between our two countries.

"At a time such as the present, when we are living under so great a strain here in the Old World, I cannot forbear from asking you to convey to all our colleagues in America our very great appreciation of that goodwill and assistance.

"May I express my Association's wish that out of this clear understanding our two countries—and within them, our two sections of the veterinary profession—will together be able to give in full to mankind the service which lies within our knowledge and power.

"Yours very sincerely,
s/ W. R. WOOLDRIDGE, *President.*"

Prosecutions Under the Food and Drug Administration

Prosecutions of food distributors by the Food and Drug Administration of the FSA are based upon composition, insect infestation, filth and contamination, economic violations, deceptive packaging and misbranding. In eight prosecutions terminated in September 1941, fines ranging from $25 to $1,400 were assessed by the federal courts.

Numerous violaters of the Food, Drug and Cosmetic Act promised to reform their ways and a great deal of unwholesome food was removed from the market. Among the latter were 18,557 lb. of low-fat butter, 378 lb. of fake olive oil, 2,146 cases of peaches, 1,034 cases of tomatoes, 99 cases of cherries, 396 boxes of candy, 228 packages of gelatin, 141 packages of dental powder, 432 packages of misbranded hair oil and 17 packages of low-grade germicides.

Horse Stealing Prosecuted

The first case of horse stealing brought before a federal court in many years was the prosecution of Dale Packard, a Crow Indian, who was charged with stealing two horses from a reservation and arraigned before the U. S. commissioner at Sioux Falls, S. Dak., in October.

Dourine

Dourine affecting the horse population in the southwestern part of the United States is being closely watched by federal and state authorities as a possible source of trouble for the horse-breeding industry. The 400 reactors found in the examination of 5,000 horses on the Papago Indian Reservation and detection of isolated cases in horses originating from various localities are conceded to have omnipotent potentiality. This unexpected outbreak of a disease once believed to have been exterminated from the United States and Canada is a living example of the tenacious character of infectious diseases of livestock and of the importance of a well-deployed service to cope with them when they flare up. In the absence of such a service and of efficient diagnostic methods, dourine would rapidly ruin horse breeding.

STUDENT CHAPTER ACTIVITIES

Cornell University

The junior chapter at the New York State Veterinary College, Cornell University, held their initial meeting of the school year on October 2.

Leonard Goss, curator of health at the New York Zoölogical Gardens, was the guest speaker. Dr. Goss pointed out that besides providing routine medical attention for approximately 4,000 inmates of the zoo, he and his collaborators are engaged in original investigations regarding the diseases of wildlife. A complete medical history is kept of every animal in the zoo from the time of birth to autopsy. Many specialists in institutions outside of the Gardens are coöperating in these studies, he said, and all of the fundamental biologic sciences are being employed. In the latter part of his address Dr. Goss gave an interesting recount of numerous incidents and experiences relative to the treatment and handling of the zoo animals.

The activities of the evening were concluded with a social hour in the seminar room of the veterinary college. Light refreshments were served.

• • •

B. M. Lyon, head the veterinary division of Lederle Laboratories, Inc., was the guest speaker at the November 13th meeting of the chapter. "Preventive Medicine—Early History and More Recent Advancements" was his subject. Joseph Kane, senior student, discussed his experiences while working for a veterinarian the past summer.

E. H. PETERSON.

Iowa State College

A regular meeting of the Iowa chapter was held on October 1. The program consisted of accordion music played by Dick Krimlofski, a message of welcome to the freshmen by President Hanna and introduction of the faculty by Dean Murray.

President Hanna read the Code of Honor, adopted last year, for the benefit of the new men.

Wendell Kopp was elected treasurer to succeed Bill Beer, who is now in the Army.

Refreshments were served at the close of the session.

• • •

The program of the October 15th meeting comprised several numbers by a piano duet and an address on general practice by F. B. Young of Waukee, Iowa.

Louis Feldman announced that the Cardinal Guild, the student governing body, had decided to allow two representatives of the Veterinary Division in its council. Bob Wahl was elected as the second man to represent the Division, along with Feldman.

Reimers then reported that the total expense of the picnic last spring was $29.75. Critic Joe Graham announced that business suits and ties must be worn to all meetings.

• • •

Lewis Harris, chief control chemist of Norden Laboratories, Lincoln, Neb., was the guest speaker at the October 29th meeting of the chapter; his subject, "Drug Laws Affecting Veterinarians."

Motions by Rasmussen that a committee be appointed to arrange for the annual dance and by Ward that the executive board take over the duties formerly handled by the committee on education were seconded and passed.

Ward then moved that a fence be erected to keep trespassers away from the grass on the south side of the veterinary buildings.

Critic Joe Graham reminded the members to use greater care in pronouncing professional terms.

J. K. HILL, *Secretary.*

Kansas State College

The Division of Veterinary Medicine is staying well up in the headlines of Kansas State College news, thanks to the active junior chapter. The veterinary students have their own organized pep section at the football games, which brings them into the sporting spotlight. Socially, they attracted wide attention from the rest of the student body by entering a pet

monkey in the running for the annual Homecoming Queen. Then they kidnapped the escorts of the candidates for queen of the annual "Ag" dance—a prank that was instrumental in keeping up the friendly feud between the "vets" and the "ags."

DON M. LIEBENGOOD, *Secretary.*

The Ohio State University

Dean Brumley has appointed John Mills as faculty adviser and Paul Soldner as assistant adviser to the student chapter.

AMONG THE STATES

California

Attempt to enjoin the city and county of San Francisco from enforcing its milk ordinance failed in the California district court of appeals. The plaintiff contended that certain parts of the milk ordinance were in conflict with the general agricultural code. Much ado was made over the permission to sell raw certified milk, under the provisions of the American Association of Medical Milk Commissions, which might lack the standards of quality set down in the regulations governing that type of milk. Here the court ruled that inasmuch as the plaintiffs were not complaining as purchasers of that kind of milk, their claims were not valid.

In short, the court held that there was no reason shown why certified milk should be pasteurized nor why other classes of milk should not. The ruling is a victory over subversive efforts to flood the market with low-grade milk. Details may be obtained from *Public Health Reports*, June 20, 1941.

Canada

"Barks for Britain."—The Ottawa Humane Society held an entertainment called "Barks for Britain" on October 18, featuring police dogs, trick dogs and performing dogs. The proceeds went to the aid of concentration centers for dogs in Great Britain, where temporary care is given to the canine inhabitants of bombed areas.

• • •

But What About Veterinarians?—In his presidential address* before the Canadian Public Health Association at Quebec, June 9-11, 1941, Jean Gregoire expressed thanks for the coöperation received in doing public health work. He named doctors, lawyers, engineers, industrialists, business men, merchants, brokers, priests and pastors (in that order) as the coöperators. Veterinarians were not mentioned, although elsewhere in the address, in referring to milk and pasteurization, the president admitted that "Whole families might die, but no one thought of laying the blame to contaminated milk nor of having the cows examined. . . . We must lower infantile mortality. . . . Economic factors—food, shelter, clothing and medical care—are a drain on the family purse. . . ."

Nowhere in the talk was there any mention of the Health of Animals Branch, the animal-disease-research laboratories or the two Canadian veterinary colleges which have made significant contributions to public welfare.

*Canadian Public Health Journal, xxxii (Sept. 1941), pp. 435-443.

Colorado

State Association.—The thirtieth annual meeting of the Colorado Veterinary Medical Association was held at the Albany Hotel in Denver, October 27.

A feature of the session was an address by Charles G. Lamb (Montreal '85), who served for 30 years as state veterinarian. His theme was the status of veterinary medicine, particularly in Colorado, when anthrax, glanders, scabies and other diseases took their toll in thousands and reduced the standard of animal health in the mountain country, and when dogs and cats were "just out of luck" if they took sick.

The other subjects and speakers were as follows: Canine Leptospirosis, by A. P. Drew, Grand Junction; Illustrated Surgical Technics, by James Farquharson, Colorado State College, Fort Collins; Calfhood Vaccination, by R. M. Gow, A. H. Francis, A. N. Carroll and M. E. Spartlin; Bovine Breeding Problems, by H. E. Kingman, Cheyenne, Wyo.

Connecticut

W. B. Young, associate professor of animal husbandry and extension animal husbandman of the state college of agriculture, has been appointed director of a school of agriculture devoted to a two-year course of training in vocational lines organized by the state university.

Florida

Last year the Florida State Veterinary Medical Association voted to award a cup annually for competition in the junior division of the Florida Fat Stock Show held in Jacksonville. The cup is awarded to the 4-H Club boy or girl who displays the best showmanship. Thirteen-year-old Amanda Jean Hancock of Alachua, Fla., was the first winner.

At a recent meeting the Association voted to award a similar cup to Future Farmers of America at the livestock show at the Tampa fair.

M. W. EMMEL, *Resident Sec'y.*

Southern and Florida Associations. — The joint meeting of the Southern Veterinary Medical Association and the Florida Veterinary Medical Association was held at the George Washington Hotel, Jacksonville, October 27-29.

J. C. Wright of Atlanta, Ga., responded to the address of welcome by Commissioner of Agriculture Nathan Mayo. The literary program following President Hasman's address, outlining the current veterinary situation in the Southland, comprised:

"Sulphur Treatment for Pink Eye in Cattle," by W. M. Emmel, University of Florida; "Swine Diseases" and "Cattle Practice," by E. V. Hover, Lima, Ohio; "Encephalitis in Dogs," by Ashe Lockhart, Kansas City, Mo.; "Therapeutic Value of Iodized Mineral Oil in Bovine Mastitis" and "Spirochetes in Tissue," by D. A. Sanders, University of Florida; "Rabid Foxes in Georgia," by W. B. Hirleman, Waynesburg, Ga.; "Phenothiazine as an Anthelmintic in Sheep and Calves," by Leonard Swanson, University of Florida; "The Practical Use of Phenothiazine in Large Animals," by I. S. McAdory, Auburn, Ala.; "The Brown Dog Tick," by H. Hixon, University of Florida; "Swine Erysipelas," by T. W. Munce, Allied Laboratories, Sioux City, Iowa; "Leptospirosis in Dogs and Cats," by H. C. Smith, Oklahoma A & M College; "Agglutination Tests," by J. E. Severin, Atlanta, Ga.; "Equine Practice," by John D. Gadd, Towson, Md.; "Scours in Cattle," by B. T. Simms, Regional Laboratory, U. S. Bureau of Animal Industry, Auburn, Ala.; "Wet and Dry Clinical Talk—Canine," by E. B. Dibbell, Baltimore, Md.; "Studies on Rabies Vaccine," by S. R. Damon, Alabama Health Department, Montgomery, Ala.; "Nutritional Diseases of the Horse," by W. W. Dimock, president-elect of the AVMA, Lexington, Ky.

Features of the clinic were equine surgery by J. D. Gadd, rope restraint by W. L. Stroup, canine operations by D. A. Eastman and J. C. Wright, cattle surgery by E. V. Hover and F. A. Story, swine postmortem examinations by T. W. Munce, and roaring operation by J. L. Hopping.

State Veterinarian J. V. Knapp of Florida officiated at the banquet, which was followed by a floor show and dance. A card party, theatre party, luncheon and a sightseeing trip were among the events of the ladies' entertainment. Alpha Psi and Omega Tau Sigma fraternities met at a noonday luncheon.

The following officers were elected: J. C. Wright of Atlanta, Ga., president; J. L. Ruble of Orlando, Fla., president-elect; M. H. Dollar of Danville, Ky., first vice-president; J. M. Bryan of Birmingham, Ala., sceond vice-president; L. A. Mosher of Atlanta, secretary; M. R. Blackstock of Spartanburg, S. Car., treasurer; and R. R. Salley of Orangeburg, S. Car., and J. L. Hopping of Atlanta, directors.

Illinois

Automobiles used by veterinarians of the state department of agriculture have been painted bright orange with "State of Illinois" in large blue letters on each side by order of Governor Green, to curtail their use for non-official business or pleasure.

• • •

Secretary-Treasurer Roy E. Kluck of the Northwestern Illinois association, whose territory extends into southwestern Wisconsin, has written a history of that society giving a clear account of its purposes, achievements and failures which will be of interest to officers of local veterinary organizations.

• • •

At the annual meeting of the American Milk Goat Record Association, held at the Stevens Hotel in Chicago, September 16, a resolution was passed to amalgamate with the American Goat Society "to implement collaboration" on matters of common interest, such as establishing closer relations with the USDA and the FTC.

• • •

Illinois Hit by Shortage of Veterinarians.— President Sisk has broadcast a circular to the veterinarians of the state calling attention to the harmful effect the shortage of veterinarians is having on the progress of veterinary practice. It calls attention to the growing custom among farmers to depend upon incompetent service where great areas are left without qualified, licensed graduates. "The undeniable fact remains," says President Sisk, "that Illinois needs more qualified veterinarians to enter the field of general practice."

President Merillat of the State Board of Veterinary Examiners has often spoken of the small percentage of those taking the semiannual examination who locate in farming districts. They prefer urban centers where there is an opportunity of making a living from pets when farmers fail to encourage them.

Indiana

Surprise Farewell Party for Dr. and Mrs. Schoenlaub.—About 40 northern Indiana veterinarians and their wives together with Dr. and Mrs. H. W. Demsey held a surprise dinner and farewell party for Dr. and Mrs. J. C. Schoenlaub on the eve (Nov. 9) of their departure for Memphis, Tenn., where they will make their home in the future.

The crowd first gathered for dinner at the Hotel La Fontaine in Huntington and, afterward, retired to the home of Dr. and Mrs. Demsey to complete the festivities of the evening.

Dr. Schoenlaub was presented with a Parker

desk set engraved "From Indiana Veterinarians" and Mrs. Schoenlaub was given a traveling outfit.

To make the surprise complete, Dr. Demsey had arranged to have the Schoenlaubs' son Jim, an art student in Chicago, present for the occasion.

• • •

Purdue Breeders' School. — A three-day course on scientific breeding of farm animals was given at Purdue University, November 13-15. The fundamentals of genetics, inheritance in milk, meat and egg production, the development of sound breeding programs for livestock and poultry breeders based on recent researches indicate the type of course given.

• • •

Purdue Conference.—This was the twenty-ninth annual short course for veterinarians (Oct. 15-17, 1941) sponsored by Purdue University, an annual event that is always well patronized and appreciated by the practitioners of the state. The present custom of bringing talent from far and near to function as teachers began many years ago at Purdue. The 1941 course, shown below, indicates the type of material and talent mobilized by this old institution in behalf of Indiana's livestock industry:

Affairs and Plans of the American Veterinary Medical Association, by H. W. Jakeman, president, and J. G. Hardenbergh, executive secretary.

Fractures in Small Animals, by H. E. Nichols, associate professor of veterinary science, Purdue University.

State and Federal Coöperation in Animal Disease Control, by W. A. Sullivan, federal inspector in charge of Indiana.

Use and Misuse of Biological Products, by H. W. Jakeman, Boston, Mass.

Rabies, by O. V. Brumley, Dean, College of Veterinary Medicine, The Ohio State University.

Illustrated Surgical Procedures, by James Farquharson, professor of surgery, Division of Veterinary Medicine, Colorado State College.

Fowl-Leucosis Complex and Turkey Diseases, by C. D. Lee, associate professor of veterinary research, Iowa State College.

Diseases of Feeder Cattle and Swine Erysipelas, by A. H. Schmidt, Triumph, Minn.

Milk Sanitation, by J. G. Hardenbergh, Chicago, Ill.

Undulant Fever, by I. F. Huddleson, pathologist, Division of Veterinary Science, Michigan State College.

Surgical Clinic, directed by J. F. Bullard, associate professor of veterinary science, Purdue University, in five sections: Horses, James Farquharson; Hogs, A. H. Schmidt; Cattle, C. Harvey Smith; Poultry, C. D. Lee; Small Animals, R. E. Nichols.

Among the demonstrations were paravertebral and epidural anesthesia, the use of the stomach tube in horses and swine, artificial insemination, intravenous medication in large animals and udder surgery.

The dinner: President E. C. Elliot of Purdue University and O. V. Brumley of The Ohio State University addressed the diners. State Veterinarian J. L. Axby was the toastmaster.

Iowa

Interstate Association.—The Interstate Veterinary Medical Association, which meets annually in Sioux City following the Cedar Rapids meeting of the Eastern Iowa association, elected L. L. Dunn of Dell Rapids as its presiding officer for the coming year. A. M. Anderson of Luverne, Minn., was elected vice-president; E. D. McCauley, treasurer; and C. H. Pals, secretary. The last two named were reëlected.

Questions of livestock sanitation and production of national significance were featured at this meeting. C. D. Lee of Iowa State College emphasized the danger of overcrowding the existing brooderhouse and coop capacity in the present effort to increase egg and poultry production. The attempt is apt to fail unless accommodations are expanded, since overtaxing space is a menace of major degree in the raising of poultry. J. E. Weinman of Lincoln, Neb., spoke on small animal practice and N. J. Miller of Eaton, Colo., on diseases of the feedlot. Federal and state livestock sanitary officials of four states participated.

Mrs. I. W. Martin of Sibley, Iowa, was chosen president of the women's auxiliary; Mrs. E. D. McCauley of Sioux City, vice-president; Mrs. D. L. Cotton of Beresford, S. Dak., secretary; and Mrs. K. S. Preston of Sioux City, treasurer.

• • •

North Central States Conference.—Seven of the north-central states—Iowa, Minnesota, South Dakota, North Dakota, Nebraska, Kansas and Missouri—were represented at a conference held at the Martin Hotel in Sioux City, September 3.

E. S. Robinson of South Dakota called the meeting to order. H. A. Seidell of Des Moines, Iowa, was elected chairman of the session and T. O. Brandenburg of Bismarck, N. Dak., secretary.

SCABIES

The various states reported on the progress which they had made in the eradication of sheep scabies, North and South Dakota being the only two states which have completely eradicated the disease. Minnesota, Kansas and Nebraska reported no new infected flocks. They have a few flocks in quarantine, which

are being dipped, and they feel certain that the disease will be eradicated during the coming year. Iowa reported that its infected bands are being dipped as rapidly as possible, but there is constant reinfection from bordering states. The situation in Missouri is still bad and there are many infected bands, even though considerable work is being done in investigations, quarantining and dipping of the infected animals.

Nebraska reported that ten herds of cattle found affected with psoroptic scabies have been quarantined and dipped. Kansas, Minnesota, Missouri and South Dakota reported no known herds of cattle affected with scabies. Iowa reported a few herds found and dipped—none now being in quarantine. North Dakota reported three herds affected with sarcoptic scabies, which have been quarantined and are being dipped.

SWINE ERYSIPELAS

J. E. Peterman reported on the use of swine-erysipelas vaccine in Nebraska. He stated that during the last four years approximately 9,500 droves have been vaccinated. Investigation is under way to find out whether this method of vaccination is safe and whether it immunizes and for how long. Questionnaires which were sent out to hog owners indicated that they were satisfied. In Nebraska a policy has been adopted of vaccinating on both infected and noninfected farms. It has been found that the younger the pig, the better for vaccination. It was found that the offspring from vaccinated sows apparently inherited no immunity; hence, sows are revaccinated at the same time that the pigs are vaccinated. Dr. Peterman advised that big joints be considered swine erysipelas at all sales barns and turned back. He stated that there is more swine erysipelas in Nebraska than any other hog disease, pointing out that it is seasonal, being most common in the spring, seldom seen in hot weather, but showing up again in the fall and winter. South Dakota reported the use of culture vaccine on 185 droves, with apparently good results. Minnesota reported that swine erysipelas is common in the southern part of the state. Iowa reported the disease prevalent in the western and southern part of the state and that ten months ago a program of simultaneous vaccination was started. Veterinarians and owners seem to be satisfied with the results. In Iowa they require that the hogs be previously immunized against hog cholera and that the vaccine be used only on farms which have previously shown the infection. About 2,000 droves have been vaccinated.

UNWISE PUBLICITY

Dr. Seidell protested commission firms writing owners of tuberculous reactors that nothing was found wrong with them or that the animals were fit for food. Harry J. Boyts agreed that this was probably true and that he would do all he could to correct it. It was recommended that these reports should state "the disease was not sufficient to cause condemnation—animal passed for food." Dr. Seidell further recommended that all states require cars and trucks hauling livestock interstate to be cleaned and disinfected. Charles E. Cotton agreed that this should be done, but stated that he was unable to get legislation which would make it possible to enforce the disinfection of trucks.

COMMUNITY SALES

Mr. Will J. Miller, who reported on community sales, stated that the Kansas regulations demand disinfection monthly and also require that the temperatures of all hogs be taken and that hogs with elevated temperatures be rejected. The temperatures of all calves which show indisposition must also be taken.

It was agreed by all that cleaning and disinfection should be done after each sale.

Dr. Seidell pointed out that if serum alone is given, hogs could not be immunized by virus and serum for three weeks or longer.

Methods of handling infected herds were discussed and all agreed that they should be held in quarantine until the entire herd passes at least one clean test.

BRUCELLOSIS

Elmer Lash reported on the progress of the Bangs' disease program and stated that the test and slaughter method, with vaccination, is going forward and, providing it is properly applied, makes the program generally more sane. He also reported that there would be considerably less money during the coming year for this work, probably about 1½ million dollars less than the amount made available the past year.

Charles E. Cotton recommended that a resolution be introduced in the proper committee of the U. S. Livestock Sanitary Association to the effect that the uniform rules for accrediting Bang's disease-free areas be amended so as not to consider, in the percentage required for accreditation, herds held under official quarantine where calfhood vaccination is practiced.

It was agreed upon by all that calfhood vaccination should never be done except under official supervision.

The interstate movement of vaccinated calves was discussed and it was pointed out that purebred breeders practicing calfhood vaccination are prohibited under existing regulations from showing or selling their calves due to the fact that they will not pass the agglutination blood test, due to having been vaccinated.

Dr. Cotton discussed House Bill No. 5531.

Following a vote to make a permanent or-

ganization of the North Central States Conference, Chairman Seidell appointed the following committee on affairs and arrangements: T. O. Brandenburg of Bismarck, N. Dak.; J. S. Snyder of Lincoln, Neb.; T. J. Arnold of Nenzel, Neb.; J. A. Barger of Des Moines, Iowa; and Mr. Will J. Miller of Topeka, Kan.

T. O. BRANDENBURG, *Secretary.*

• • •

Southwest Iowa Association.—The Southwest Iowa association met at the Hotel Chieftain in Council Bluffs, October 7.

C. C. Steele of Traynor was elected president; George Hawthorne of Clarinda, secretary-treasurer; and A. E. Nelson of Shenandoah, member of the board of directors.

Kansas

The state legislature has appropriated $2,412,900 for the state college and its branch stations for the present biennium. Of this sum $30,000 is for research work on animal diseases and $50,000 for the construction of an animal-disease-research laboratory.

Kentucky

Central Kentucky Association.—The Central Kentucky Veterinary Medical Association met at the Lafayette Hotel in Lexington, October 10 for an informal dinner in honor of W. W. Dimock and his corp of new assistants in the Department of Animal Pathology at the University of Kentucky.

D. L. PROCTOR, *Secretary.*

Michigan

Whitney Veterinary Club.—The Whitney Veterinary Club met at the Hillside county fair on September 26 to pay tribute to the oldest practicing veterinarian in Michigan, J. C. Whitney of Hillsdale, who entered practice in southern Michigan in 1883.

E. C. W. SCHUBEL.

Missouri

Northeastern Association.—The Northeastern Missouri Veterinary Medical Association held a meeting at Palmyra, October 17, in the form of a picnic and clinic at the sales barn of H. Hinds on the local fair grounds. G. R. Clark of Hannibal, P. C. Lahs of Mexico, A. D. Glover, Jr., of Canton and A. D. Glover, Sr., of LaBelle conducted a clinic on pigs, dogs and horses before an attentive audience of 25.

• • •

Northwestern Association.—A large and small animal clinic was staged at Maryville, October 21, by the Northwestern Missouri association. Operations were performed by E. S. Harrison of Burlington Junction, J. E. Weinman of Lincoln, Neb., and K. Sears of Maryville.

New Hampshire

New England Association.—The twelfth annual meeting of the New England Veterinary Medical Association was held at Laconia, October 6-7. The morning sessions were given over to the literary program and the afternoons to clinics.

Among the clinicians and contributors of papers were Otto Stader of Ardmore, Pa., who spoke on fractures in small animals and demonstrated this subject with the assistance of G. B. Schnelle of Boston, Mass. Cassius Way of New York City spoke on state medicine versus the practitioner and had charge of the large animal clinic. J. B. Skelton of Riverside, Conn., spoke on lameness in the horse.

Other contributors to the program were B. S. Killian of Somerville, Mass.; G. E. Corwin of Suffield, Conn.; S. W. Stiles of Falmouth Foreside, Me.; and R. O. Biltz of E. R. Squibb & Sons.

Howard F. Ferguson of Newport, R. I., was elected president to succeed R. W. Smith, and H. W. Jakeman was reëlected secretary-treasurer.

President H. W. Jakeman of the AVMA was the principal speaker at the banquet.

The ladies were entertained by a boat trip on Lake Winnipesaukee and a motor trip around the mountains, planned by Mrs. R. W. Smith.

CARL E. CHASE.

New Jersey

New Dog-Control Law.—Considerable interest is being shown in the new dog-control law which became effective on November 1, 1941. This measure is intended to provide for the licensing of all dogs within the state and the eventual elimination of stray dogs.

• • •

The Veterinary Medical Association of New Jersey is coöperating with other agencies in preparing the program for Agricultural Week, January 27-30, 1942. One-half day is to be devoted to the herd-health program and arrangements have been made for speakers and discussions.

J. R. PORTEUS, *Resident Sec'y.*

New York

First Annual Bible Week.—S. Eugene Herman, New York City veterinarian, was named vice-chairman of the Laymen's National Committee, sponsors of Bible Week (Dec. 8-13, 1941), a movement designed to reëstablish the strength of the home for the benefit of the nation. Through acceptance of the office Dr. Herman became honorary vice-chairman of "First Annual Bible Week," among such national figures as Frank L. Andrews, president of the Hotel New Yorker; Colonel Frank Knox, secretary of the navy; L. J. Taber, master of the National Grange; Robert L. Johnson, presi-

dent, Temple University; and Marshall Field III, publisher of "PM" and founder of the new Chicago morning newspaper.

Washington

State Association.—At the annual session of the Washington state association, held at Seattle, October 17-18, F. E. Smith of Seattle was elected president; Marvin Hales of Pasco, vice-president; and M. O. Barnes of Olympia was reëlected secretary-treasurer. Peter MacKintosh of Yakima was chosen delegate to the House of Representatives of the AVMA for the usual two-year period and Harry Marston of Seattle, the alternate.

COMING MEETINGS

National Association of Bureau of Animal Industry Veterinarians. LaSalle Hotel, Chicago, Ill. December 3-5, 1941. F. A. Imler, secretary, P. O. Box 187, Kansas City, Kan.

United States Live Stock Sanitary Association. LaSalle Hotel, Chicago, Ill. December 3-5, 1941. Mark Welsh, secretary, College Park, Md.

Nebraska State Veterinary Medical Association. Lincoln, Neb. December 10, 1941. J. D. Sprague, secretary, David City, Neb.

Western New York Veterinary Medical Association. SPCA Bldg., Buffalo, N. Y. December 11, 1941. F. F. Fehr, secretary, 243 S. Elmwood Ave., Buffalo, N. Y.

South Dakota Veterinary Medical Association. Carpenter Hotel, Sioux Falls, S. Dak. December 11-12, 1941. J. T. McGilvray, secretary, 116 N. Dakota Ave., Sioux Falls, S. Dak.

Delaware Veterinary Medical Association. Wilmington, Del. December 18, 1941. C. C. Palmer, secretary, University of Delaware, Newark, Del.

American Association for the Advancement of Science. Dallas, Texas. December 29, 1941-January 3, 1942. (AVMA representative: Ward Giltner, Michigan State College, East Lansing, Mich.)

Kansas Veterinary Medical Association Wichita, Kan. January 5-6, 1942. Chas. W. Bower, secretary, 1128 Kansas Ave., Topeka, Kan.

Arkansas, Mississippi and Tennessee associations (joint annual meeting). Memphis, Tenn. January 5-7, 1942. Communications should be addressed to John H. Gillmann, 769 Vance Ave., Memphis, Tenn.

California Veterinary Conference (under joint sponsorship of California State Veterinary Medical Association and University of California). Davis, Calif. January 5-8, 1942. Further information may be secured from C. M. Haring, Division of Veterinary Science, University of California, Berkeley, Calif.

University of Pennsylvania Conference for Veterinarians. University of Pennsylvania, Philadelphia, Pa. January 6-7, 1942. G. A. Dick, dean, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa.

Cornell University Annual Conference for Veterinarians. New York State Veterinary College, Ithaca, N. Y. January 7-9, 1942. W. A. Hagan, dean, New York State Veterinary College, Ithaca, N. Y.

Ohio State Veterinary Medical Association. Columbus, Ohio. January 7-9, 1942. R. E. Rebrassier, secretary, The Ohio State University, Columbus, Ohio.

Minnesota State Veterinary Medical Association. Minneapolis, Minn. January 8-9, 1942. H. C. H. Kernkamp, secretary, University Farm, St. Paul, Minn.

Intermountain Livestock Sanitary Association. Salt Lake City, Utah. January 8-10, 1942. D. E. Madsen, acting secretary, Utah State Agricultural College, Logan, Utah.

Vermont Veterinary Medical Association. Hotel Vermont, Burlington, Vt. January 10, 1942. G. N. Welch, secretary, Northfield, Vt.

Oklahoma Veterinary Medical Association. Oklahoma City, Okla. January 12-13, 1942. F. Y. S. Moore, secretary, Box 485, McAlester, Okla.

Rhode Island Veterinary Medical Association. Narragansett Hotel, Providence, R. I. January 13, 1942. J. S. Barber, secretary, 260 Pleasant St., Pawtucket, R. I.

Indiana Veterinary Medical Association. Severin Hotel, Indianapolis, Ind. January 13-15, 1942. Charles C. Dobson, secretary, New Augusta, Ind.

New Brunswick Veterinary Association. St. John, N. B. January 14, 1942. L. S. Doyle, registrar, Moncton, N. B.

New Jersey, The Veterinary Medical Association of. Hotel Douglas, Newark, N. J. January 15-16, 1942. J. R. Porteus, secretary, P. O. Box 938, Trenton, N. J..

South Carolina Association of Veterinarians. Columbia, S. Car. January 20, 1942. R. A. Mays, secretary, State Office Bldg., Columbia, S. Car.

Texas State Veterinary Medical Association. Fort Worth, Texas. January 20-21, 1942. M. B. Starnes, corresponding secretary, City Health Dept., Dallas, Texas.

Illinois State Veterinary Medical Association. Springfield, Ill. January 22-23, 1942. C. C. Hastings, secretary, Williamsville, Ill.

Michigan State College Post-Graduate Conference for Veterinarians. East Lansing, Mich. January 26-30, 1942. Ward Giltner, dean, Division of Veterinary Science, Michigan State College, East Lansing, Mich.

Ontario Veterinary Association. Toronto, Ont. January 27-28, 1942. Jean M. Rumney, acting

secretary-registrar, 612 King St. W., Hamilton, Ont.

Alabama Polytechnic Institute Annual Conference for Veterinarians and Alabama Veterinary Medical Association. Auburn, Ala. January 27-29, 1942. I. S. McAdory, secretary, Alabama Polytechnic Institute, Auburn, Ala.

Iowa Veterinary Medical Association. Des Moines, Iowa. January 27-29, 1942. C. C. Franks, secretary, Grimes, Iowa.

Virginia Conference for Veterinarians. Virginia Polytechnic Institute, Blacksburg, Va. February 4-5, 1942. Further information may be secured from E. P. Johnson, Virginia Polytechnic Institute, Blacksburg, Va.

Louisiana Veterinary Medical Association. Louisiana State University, Baton Rouge, La. February 18-19, 1942. C. M. Heflin, secretary, 2130 Tulip St., Baton Rouge, La.

State Board Examination

Alabama Veterinary Medical Examining Board. Moulton Hotel, Birmingham, Ala. December 18-19, 1941. I. S. McAdory, secretary, Alabama Polytechnic Institute, Auburn, Ala.

PERSONAL NOTES

Births

To Dr. (Colo. '41) and Mrs. L. R. Metzger of Boulder, Colo., a daughter, August 1941.

To Dr. (Colo. '40) and Mrs. D. O. Meskimen of Delta, Colo., a son, September 1941.

To Dr. (Colo. '40) and Mrs. G. G. Miller, Jr., of Denver, Colo., a daughter, August 1941.

To Dr. (Corn. '28) and Mrs. R. S. MacKellar, Jr., of Fort McClellan, Anniston, Ala., a daughter, Janet, October 14, 1941.

To Dr. (U.P. '38) and Mrs. Morris Weiner of Philadelphia, Pa., a daughter, Arlene Karen, October 2, 1941.

To Dr. (Colo. '38) and Mrs. Thomas M. Eagle of Fort Riley, Kan., a son, Thomas Clayton, November 12, 1941, at Manhattan, Kan.

Marriages

Gordon Marold (K.S.C. '40) of Littleton, Colo., to Doris Odell of Denver, Colo., November 2, 1941.

Wallace G. May (M.S.C. '41) of Adrian, Mich., to Eunice Weaver of Lansing, Mich., September 28, 1941.

Charles Robert Pastors (O.S.U. '31) of Staunton, Va., to Bettye McClung Kerr of Lexington, Va., October 11, 1941.

Sidney L. Kaplan (O.S.U. '38) of Camp Edwards, Mass., to Jeanette Perlman of New York City, at New York City, October 18, 1941.

DEATHS

Mrs. George D. Bishop, wife of Dr. Bishop (K. C. V. C. '12) of Salem, Ore., died of meningitis on March 30, 1941.

A. H. Francis, 53, inspector in charge of the U. S. Bureau of Animal Industry at Denver, Colo., died of a heart attack in October of 1941.

Born at Arcadia, Neb., Dr. Francis was graduated from the St. Joseph Veterinary College in 1915.

He joined the AVMA in 1917.

H. H. Day of Denver, Colo., died on October 10, 1941.

Born at Mount Orab, Ohio, January 22, 1878, Dr. Day was graduated from the Cincinnati Veterinary College in 1912. He had been in the service of the U. S. Bureau of Animal Industry since June 1913.

Dr. Day joined the AVMA in 1924.

R. A. Reinhard, 57, of Reeseville, Wis., died on October 31, 1941.

Born at Reeseville, Wis., December 14, 1883, Dr. Reinhard was graduated from the Chicago Veterinary College in 1907. Following graduation, he practiced until 1918, when he retired to join the Reinhard Lumber Co. of Reeseville. In 1924, he became manager of the company, succeeding his brother, who died.

Mrs. William P. Hill, wife of Colonel Hill, retired veterinary officer of the Regular Army, died suddenly on October 2 while motoring in New England.

Mrs. Hill is recalled as the wife of the chief veterinarian of the American Expeditionary Force, the only wife of an American officer in France during World War I. The reason for this distinction was that the declaration of war by the United States found Colonel (then Major) Hill and his wife in France, where he had been sent as an observer by the surgeon general.

Following the Colonel's retirement from the Army, the Hills made their home in Florida.

Walter Henry McKenzie, recently retired district veterinary inspector of the Health of Animals Division, Dominion Department of Agriculture, Vancouver, B. C., died on October 24, 1941.

Born at Alexander, Manitoba, October 18, 1876, Dr. McKenzie was graduated from the Ontario Veterinary College in 1906. Immediately afterward, he entered the McKillip Veterinary College for post-graduate work in meat inspection, completing that course in the spring of 1907.

Dr. McKenzie served the Health of Animals Division in western Canada from April 17, 1907, until October 18, 1941, when he was retired on superannuation.

Each lot of B. T. V. proves its immunizing ability. Susceptible pigs, given a single 5 c.c. dose of B.T.V. must withstand a subsequent dose of virus which uniformly kills the controls—a more severe test than any field exposure.

One dose OF CUTTER B.T.V. PROTECTS AGAINST CHOLERA 'TIL MARKET

As the result of extensive field experience, dosage recommendations on Cutter B. T. V. no longer call for two injections on pigs which are to be marketed. A single dose of this vaccine confers immunity of several months' duration.

Give your clients the benefit of this safe immunization procedure, which eliminates the necessity for bringing living virus on the premises and avoids virus "breaks" and virus "stunting."

CUTTER *Laboratories*

BERKELEY
California

CHICAGO
111 N. Canal St.

NEW YORK
138 W. 53rd St.

Vital Cogs in the Wheels of Preparedness— the Men of the Veterinary Profession . . . and

ARMOUR'S FOWLER BRAND ANTI-HOG CHOLERA SERUM!

In these times of emergency, it is of the greatest importance that our nation have an ample supply of meat. The men of the Veterinary Profession are leaders in the determined fight to protect livestock production for the health-defense of our country. And Armour's Fowler Brand Anti-Hog Cholera Serum and Hog Cholera Virus are the Veterinarians' potent weapons in combating the most dreaded of all swine diseases.

Armour's Fowler Brand Serum is proved dependable by test after test—in the laboratory, and in the field. Its quality is assured by the watchful care that is taken in every step of the manufacture. Graduate Veterinarians supervise the preparation of Armour's Fowler Brand Serum . . . and it is made from the most carefully selected materials — with the finest of modern equipment and technique.

• • •

Your ARMOUR'S FOWLER BRAND Serum and Virus needs can be quickly and easily filled at most Armour Branch Houses or Creameries; or by Dr. Robt. D. Wall, 910 28th Street, Des Moines; Dr. Robt. J. Hoskins, 3203 East Washington Street, Indianapolis; Mr. A. G. Carter, Findlay, Ohio; Dr. H. W. Brown, 623 West Main Street, Fort Wayne; Mr. Oliver W. Nelson, Nelson Laboratories, Sioux Falls, S.D.

ARMOUR and COMPANY

VETERINARY DIVISION
KANSAS CITY, KANSAS

An' Related Topics

Slaps and Socks

The Journal of the American Medical Association has done a lot for the application of medical science by slapping physicians on the wrist and socking quacks on the nose. A current issue tells physicians that the weight-reducing diets recommended by magazines are furnished by "persons well trained in dietetics," while physicians consulted about reducing wave that detail of practice aside. "Oh, I'd cut down on fats and starches and sweets" is the only prescription the plump are apt to get from their physicians, instead of a better diet than the magazines play up.

"What Price Glory?"

A wounded German pilot (*Time*, Aug. 18, 1941) downed in northern England refused to take a blood transfusion at the hospital on the ground that he did not want his Aryan blood polluted. He struggled when the doctors tried to anesthetize him, and he died—unpolluted.

A Horse Laff

So, I'm passing out? Yeah, out of jobs neighboring on hardships not far removed from cruelty. The old treadmill, and horse-power thresher, those long laps on coaches, 18-hour shifts on street cars, 10-ton loads of coal, airline expressing and the drag of the plow are memories of none-too-happy days. So, go to it my dear Petrol, you're doing a fine job, while I'm resting up to come in and pay off the mortgage.—*Monsieur Le Cheval.*

The 15 million horses and mules in the United States are valued at considerably over a billion dollars, and to replace them, says Secretary Dinsmore of the Horse and Mule Association of America, it would take 8 billion dollars for mechanized equipment, nor do tractors furnish any fertilizer or raise little tractors to replace the old ones.

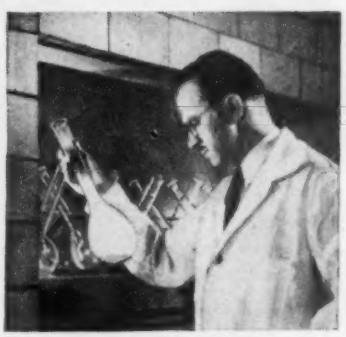
(*Continued on page xxii*)

● I may be young but I've got my memories. Why, I can remember way back when they switched me to solid food. At first I didn't exactly take to the idea. But, you know, there was really nothing to it. I liked Pard right away—and, boy, how I like Pard now. *Not* just because Pard always tastes so good! But Pard has kept me full of pep and healthy—always.

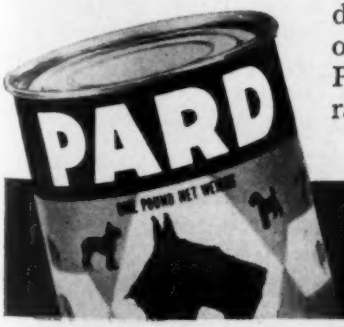
Never a single diet-caused ailment!

That's the way it is with all us dogs at Swift's Research kennels. 5 Pard-fed generations of us!

And those interested in dog welfare know from their own experience, as well, that Pard is a health-building ration for dogs!



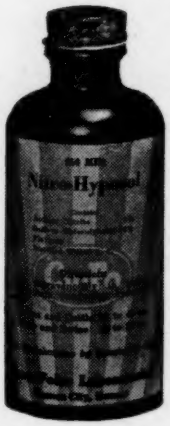
WORLD'S LARGEST FOOD RESEARCH LABORATORIES. *Pard research and tests are conducted by experts in the Swift Nutritional Research Laboratories. The 5-generation dogs at Swift's Kennels are fed Pard exclusively—the same Pard that is sold in retail stores.*



PARD

SWIFT & COMPANY'S NUTRITIONALLY BALANCED DOG FOOD

Nitro-Hyposol



SOLUTION

For hydrocyanic acid poisoning.

6-250 cc . . . $3.00

TABLETS

For toxemia incident to colic, and alimentary stasis.

6-100s $9.45

Curts-Folse Laboratories

73 Central Avenue

Kansas City, Kansas

TEST TUBE DOGS

T·I·O·G·A

. . . and others

A good dog — like Napoleon's army — travels on his stomach. When you feed an exclusive TI-O-GA ration, it's *bound* to show it in the works. Dogs come across with more *give*, more *pep*, more *ginger* and *bounce*. Results are tested by laboratory work and field tests.

So — recommend TI-O-GA with confidence. Write for the *proof* and the *results* our test tubes verify.

Balorations, Inc., Div. of Tioga Mills
Waverly, N. Y., or
200 Davis St., San Francisco, Calif.

MEAL ★ PELLETS ★ PUPPY FOOD
The Complete Foods

An' Related Topics

(*Continued from page xx*)

European Undernourishment

It has been rumored that the greatest "secret weapon" of the "blitz" to be used in winning the war is to render the populations of conquered territory impotent by undernourishment, notably vitamin deficiencies. The Belgian society of physicians has reported* that the shortage of food in Belgium is already taking its toll in intestinal troubles of infants and colitis in older children. Avitaminoses, cutaneous suppurations, furunculosis, impetigo, pyodermatitis, colibacillary infections, and paratyphoid traceable to vitamin A deficiency and lack of fats are among the medical problems of the hour which will cause havoc. Organized medical effort has been largely suspended. Though two medical journals have been permitted to resume publication, they are purely technical and scientific reviews.

*J.A.M.A., June 28, 1941.

Magazines in the Doctor's Office

Inasmuch as the sick congregate in the doctor's office, the magazines on the waiting-room table, often yellow from age, can furnish convenient carriers of infection as well as reading material to pass away time. While the visiting patients of the doctor's waiting room are mostly ambulatory victims of sheltered chronic maladies, it is not beyond reason to suspect that some leave traces of their microparasites on the pages of these tattered magazines. The veterinarian who knows the disease potential of gregarious patients has a wholesome respect for things lying around. You couldn't stop foot-and-mouth with a lot of old magazines lying around in the cow stable. We are thinking of the doctor's office as comparable with the sales barn.

Earth is in the suburbs, not in the downtown section of the universe, says a Lick Observatory savant, but he does not say what stretches beyond the suburbs.

(*Continued on page xxiv*)

SO LONG, FELLAS-I'M GOING FOR MY KEN-L-RATION WITH EXTRA VITAMINS!

Here's a Food Containing Every Vitamin Essential to a Dog's Health . . . And Made from Meat That's GOVERNMENT INSPECTED!

Dogs know when they need vitamins . . . and they get their fill when they're fed Ken-L-Ration. It's enriched with extra vitamins to give dogs *every vitamin* known to be essential to a dog's health! Ken-L-Ration contains extra Vitamin B_1 plus other important vitamins including A, B_2 (G), B_6 and D that scientific tests indicate are necessary for proper nutrition. Recommend Ken-L-Ration to your clients. It's vitamin-rich and all meat is Government Inspected. *It costs no more than other advertised dog foods!*

Here's Proof!

KEN-L-RATION LEADS IN BODY-BUILDING FOOD ELEMENTS

Recent scientific rat tests show that *less* Ken-L-Ration is needed for a one-gram weight gain than any of four leading dog foods!

DOG FOOD TESTED	Grams Food Consumed Per Gram Gain in Weight
No. 1	15.54
No. 2	16.10
No. 3	17.55
No. 4 (KEN-L-RATION)	12.64

KEN-L-RATION

The Food of Champions

The AVMA
Will Pay
25 Cents
Plus Postage
for the following

BACK ISSUES OF THE JOURNAL

April 1940
September 1940
January 1941
March 1941
April 1941
August 1941

Must be in good condition

AMERICAN VETERINARY MEDICAL ASSOCIATION, 600 S. Michigan Ave., CHICAGO

An' Related Topics

(*Continued from page xxii*)

Agricultural Independence Not Logical

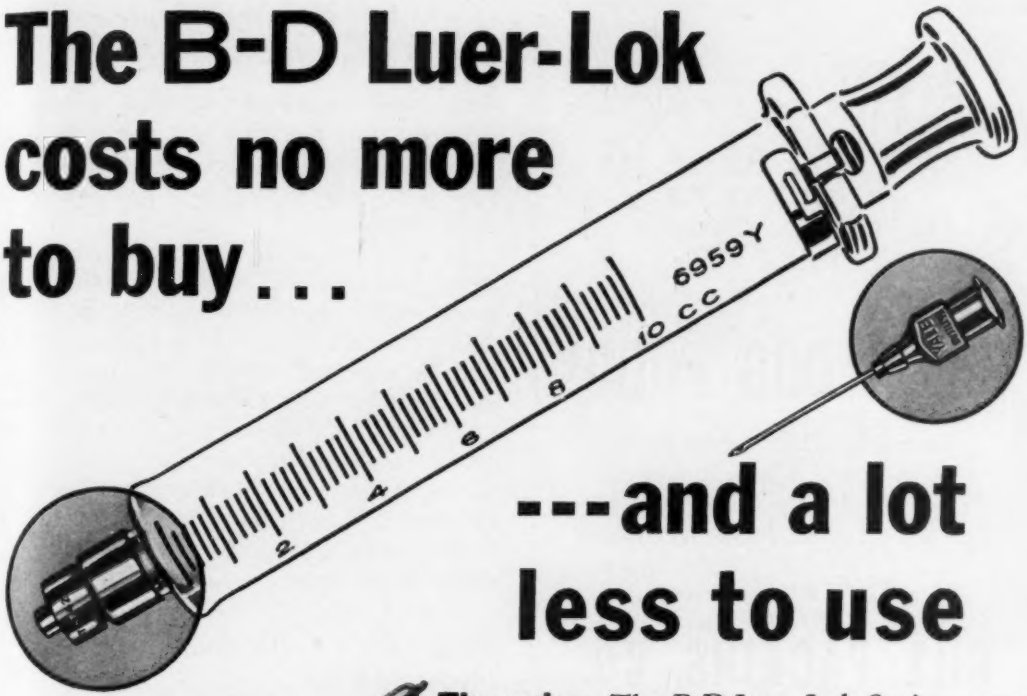
Farmers and veterinarians work so close together that their interests are mutual. No swirl of events can separate their interests. Morally bad and economically dubious coaching of farmers is, therefore, important to us. Just now, for example, some of the farmers' voluntary advisers are protesting any kind of government subsidy for farming on the ground that agricultural independence is being thwarted. Another group equally prominent in the agrarian circle is urging (*seriatim*), (1) higher corn loans, (2) compulsory marketing quotas, (3) bigger payments for small farmers and reduced ones for big farmers, (4) more pay for soil-conserving crops. And this is the type of diametrically opposite coaching American farmers have labored under through the years. The result is farming as we know it—an industry begging the Congress for aid today and asserting its independence tomorrow depending upon whether times are good or bad. Long-time planning, it seems, is not on the program.

Agricultural independence is not logical because the land furnishes man's only means of staying on earth. So, man is going to have something to say about how his only means of existence is being managed. Is this not the real reason why farming is coming more and more under the regulatory function of the government—the people? As man gets wiser and more philosophic, he is not more likely to let farmers farm as they please than to permit another group to monopolize the use of the atmos-

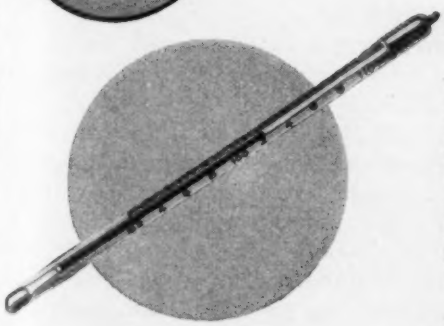
(*Continued on page xxvi*)

IN CANKER
OTORRHEA
EAR MITES
VETERINARY *Auralgan*
Veterinary Division THE DOHO CHEMICAL CORPORATION NEW YORK - MONTREAL - LONDON

The B-D Luer-Lok costs no more to buy...



---and a lot less to use



TRUE or FALSE?

Statement. *A Veterinary Thermometer need not be as accurate as a human fever thermometer.*

False. Sick animals can't talk. A Veterinarian must depend on his judgment and his diagnostic instruments. Human patients that talk sometimes mislead M.Ds. An inaccurate diagnostic instrument will certainly mislead a Veterinarian.

B-D Veterinary Thermometers must undergo 70 operations, and survive 36 inspections and tests for accuracy and reliability before they are allowed to get into your hands.

The price. The B-D Luer-Lok Syringe costs NO MORE than the B-D all-glass Luer Slip Syringe.

The first extra value—there's practically no tip breakage because of the extraordinary thickness and strength of the tip. You use up fewer syringes.

The second extra value — the needle can't jump off the Luer-Lok to upset your dosage control, lose valuable time and waste your solution.

BECTON, DICKINSON & CO.

RUTHERFORD, N. J.

Member Veterinary Exhibitors' Association

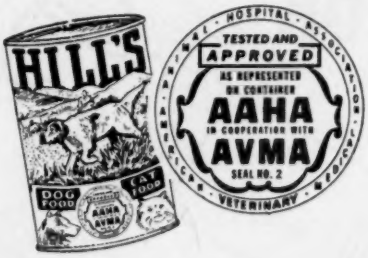
GENTLEMEN: AVMA 12

Kindly send me your new catalog of B-D Veterinary Products.

*Name*_____

*Address*_____

*City*_____ *State*_____



HILL'S DOG FOOD!

Nutritionally Adequate.
Who could ask for more?

Tested and Approved.

Write for sample

HILL PACKING CO.

TOPEKA, KAN.

UNIVERSITY OF PENNSYLVANIA

School of Veterinary Medicine

PHILADELPHIA

•

Offers a complete course in veterinary medicine extending over four sessions, each beginning the fourth Monday in September and ending the second Wednesday in June. Clinics and equipment unexcelled.

Graduate Courses in Pathology and Bacteriology (including immunology) extending through one session.

For Catalogue and further information, address

GEORGE ALEXANDER DICK,
Dean, Veterinary Faculty

An' Related Topics

(*Continued from page xxiv*)

phere or the rays of the solar spectrum. Farmers must somehow get ready to have the land managed by governmental regulation. Too bad, perhaps, but that seems to make sense.

As a matter of fact the whole problem is too big to be settled by a swish of the hand, or by the whims of a political party.

On the farmers' side is the prediction that farmers will not go on forever working the land with no greater hope ahead than paying the interest on the mortgage. Nations fall when the land is tilled by slaves. So, a wise population will regulate farming and wise farmers will drive the best bargain they can. Complete independence is outmoded.

Sensitization to Thiamin Hydrochloride

Grave allergic reactions may follow repeated parenteral administration of thiamin hydrochloride in man. A New York physician (*J.A.M.A.*, July 19, 1941) describes a serious reaction observed in an aged woman who had received doses at intervals of ten days. After receiving one of these doses she became seriously dyspneic and cyanotic, but recovered after six hours. An allergic collapse from repeated parenteral use of this vitamin fraction is described by a Cincinnati physician (*ibid.*, Aug. 23, 1941). These accidents responded to hypodermic injection of epinephrin.

The death rate for the whole United States runs around ten per thousand population. For the last week of August 1941, it was 9.9 per M in 88 large cities.

(*Continued on page xxviii*)

HASCO EAR TAGS

AUCTION SALE TAGS
Cattle, Sheep and Hogs

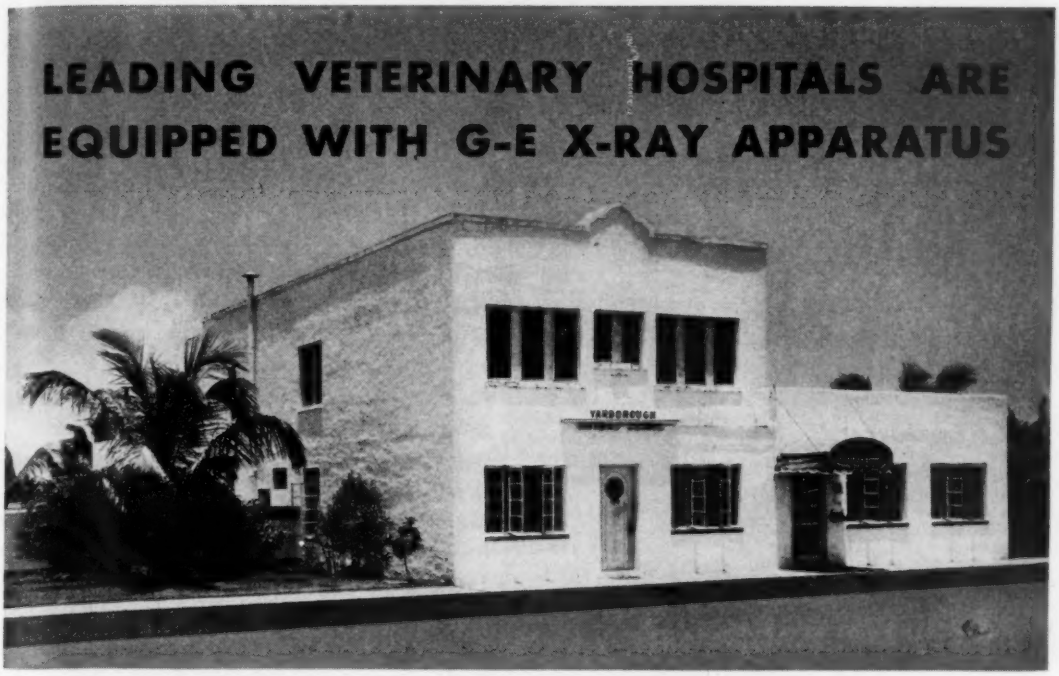
136

Used by U. S. Dept. of Agri., State Depts. . . . Prominent Breeders everywhere. Aluminum or Steel. Numbered or Stamped as desired. Write today for Prices.

INF SAMPLE

NATIONAL BAND & TAG CO. Dept. 6-290; Newport, Ky

LEADING VETERINARY HOSPITALS ARE EQUIPPED WITH G-E X-RAY APPARATUS



Yarborough Animal Clinic, 2365 N. W. 35th St., Miami, Florida, is operated by Dr. J. H. Yarborough, official veterinarian for Hialeah Race Track. A modern, air-cooled veterinary hospital with accommodations for 175 patients, its diagnostic and treatment facilities include a G-E Model F-3 Portable X-Ray Unit.

TO every modern, progressive veterinarian who recognizes that x-ray equipment would be a sound practice-building, dividend-paying investment, G. E. makes this suggestion:

Why not be guided by the satisfactory experience of your colleagues—it's an excellent answer to your question: "Which x-ray equipment would be best suited to my requirements?" The majority of the A.V.M.A.-accredited veterinary colleges and more than 150 leading small animal hospitals have selected G-E X-Ray apparatus!

Before you invest in any x-ray unit, protect your investment by first investigating the G-E Model F-3 Portable X-Ray Unit. Do as your value-wise colleagues did—discuss the Model F-3 with your local G-E representative. He will give you full information about the unit's moderate price and the convenient payment plan which can be tailored to fit your budget. If you wish, he will arrange an interesting demonstration, at your convenience.

To request his visit, or your copy of the big illustrated catalog which describes G-E X-Ray and Electromedical apparatus for veterinary surgeons, just fill in and mail the convenient coupon, today.

---- CLIP, SIGN, and MAIL, TODAY ----

☐ Please have your representative arrange with me for a Model F-3 demonstration, at my convenience, when he is next in this vicinity.

☐ Please send me my copy of the big illustrated catalog which describes G-E X-Ray and Electromedical apparatus for veterinary surgeons.

Name_____

Address_____

City_____

M112

GENERAL ELECTRIC X-RAY CORPORATION

2012 JACKSON BLVD. CHICAGO, ILL., U. S. A.

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

For Sale or Lease

PRACTICES, locations and partnerships furnished and sold—all states. F. V. Kniest, 1537 S. 29th St., Omaha, Neb.

FLUOROSCOPIC X-Ray machine, custom built for local veterinarian who could not accept when completed. Original price $995.00. Table-top design, white enamel finish, steel construction. Complete with screen, tube, timing switch, foot control. $500.00 F.O.B. Milwaukee. Cash; no terms. Matthew Adrian X-Ray Inc., Viaduct Bldg., 16th & Pierce Sts., Milwaukee, Wis.

VERY DESIRABLE location available for veterinarian in large trade territory. For further information address: Mr. R. J. Tentinger, Le Mars, Iowa.

Position Wanted

VETERINARIAN, married, age 28, Cornell graduate, Christian. Desires permanent position with general practitioner. Address: "AF," c/o Journal of the AVMA.

Wanted

VETERINARIAN with California license to lease hospital. Mixed practice. Hospital so located that energetic and conscientious practitioner has excellent opportunity to make a good living. Address "OE," c/o Journal of the AVMA.

CORNELL 1940 graduate. Experience in large and small animal practice, dairy work; accredited veterinarian for government testing. Will consider partnership or share in deal for a practice or location. Address: "W," c/o F. V. Kniest, 1537 S. 29th St., Omaha, Neb.

Books and Magazines

DOG SENTIMENT CARDS for office wall, set of 12, 60 cents. *Judy's Dog Encyclopedia*, all dog subjects, $5. *Dog World* monthly, $2 for one year; $3 for 2 years; $5 for 5 years. JUDY PUBLISHING COMPANY, 3323 Michigan Blvd., Chicago, Ill.

KFS CANNED FOOD

TESTED AND APPROVED AS REPRESENTED ON CONTAINER AAHA IN COOPERATION WITH AVMA SEAL NO. 4 — AMERICAN ANIMAL HOSPITAL ASSOCIATION · AMERICAN VETERINARY MEDICAL

CERO-MEATO (Dry) DOG FOOD

Tested and Approved

WRITE FOR SAMPLE

KENNEL FOOD SUPPLY CO., INC.

Fairfield, Conn. AVMA 12/41

An' Related Topics

(*Continued from page xxvi*)

What Are Beef Cattle?*

As distinguished from dairy, mixed or dual-purpose types, beef cattle are breeds of the domestic ruminant having favorable proportions and quality of edible flesh as compared with other anatomic components of the body. The musculature is thicker and more compact, the lower leg bones are shorter, and the fat tends to marble the flesh and surround its parts rather than collect in the splanchnic organs. Bone, muscle and fat of beef cattle develop in series of waves. Bone reaches its peak first, and when muscle development stops, fat gets the nutrition which bone and muscle previously received.

The texture of meat lies in the number of fibers per bundle, and tenderness in the amount of connective tissue the muscle contains. In these two respects the flesh of beef and dairy breeds differ in favor of the former. In regard to toughness, however, the distribution of the connective tissue (the grain) is a factor; that is, in two pieces of meat having the same amount of connective tissue, the fine grained is tender and the other tough. Tenderness is governed also by ripening through chemical changes taking place in the protein of the connective tissue (collagen) and of the muscular part.

Along with other details too numerous to mention here, beef cattle are ruminants of the genus Bos which respond by breeding to these specifications.

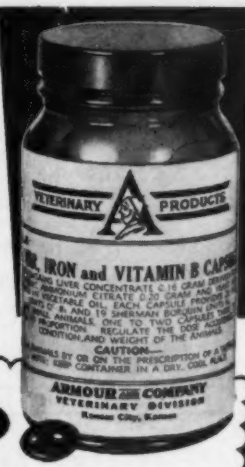
*Taken in part from "Quality of Mutton and Beef," Canadian Journal of Comparative Medicine and Veterinary Science, v (Aug. 1941), pp. 214-228.

There is a species of ants in Central America that raises an agricultural crop for its young. These farmer ants lay down a bed of leaf particles on the floor of the hive and when decomposed they implant the bed with the mycelia of a tiny mushroom that furnishes food for the family.

(*Continued on page xxx*)

When the blood picture is below normal . . .

LIVER, IRON AND VITAMIN B SEALED CAPSULES ARMOUR



★ Liver, Iron and Vitamin B Sealed Capsules *Armour* are a convenient, easily assimilated combination of liver, iron and the Vitamin B Complex.

Their function is manifold. The liver and iron are important "blood builders". The Vitamin B Complex factors are essential to proper nerve function . . . as appetite stimulants . . . in assuring normal digestion. . . . Thus it may be seen that Liver, Iron and Vitamin B Sealed Capsules *Armour* are worthy of serious consideration whenever the blood picture is below normal . . . whenever anemia or general debility and loss of "tone" requires prompt, effective treatment.

Each airtight, fused capsule contains: Liver Extract Concentrate . . . 0.16 gram; Iron and Ammonium Citrate . . . 0.20 gram; Vitamin B Complex q. s. . . . to furnish 22 International Units of B_1 and 19 Sherman-Borquin Units of B_2 suspended in a neutral medium.

Available in bottles of 100, 500 and 1,000 capsules.

FOR PROMPT ATTENTION, DIRECT YOUR ORDER TO VETERINARY DIVISION

ARMOUR AND COMPANY
KANSAS CITY, KANSAS

BOOST VITALITY DOG FOODS

Regardless of whether or not you *sell* dog foods, you need not hesitate to *boost Vitality* to your patrons. You can recommend VITALITY DOG FOODS purely on the grounds of outright HIGH QUALITY with the assurance that every needed nutritional factor is amply provided.

For more complete information write . . .

VITALITY MILLS, INC. Board of Trade CHICAGO, ILLINOIS

Lapel Emblems

55 cents Postpaid

[Federal Tax Included]

AMERICAN VETERINARY MEDICAL ASSOCIATION
600 S. Michigan Ave., Chicago

"Poultry Information—Please"

"Poultry Information—Please" was presented by the Poultry Committee of the U. S. Live Stock Sanitary Association at that organization's forty-fourth annual meeting (Chicago, December 4-6, 1940) as a symposium on diseases of chickens and turkeys. By special arrangement the published proceedings of this symposium have been reprinted in pamphlet form, comprising 42 pages of discussions of bacterial, virus, nutritional and parasitic diseases.

Copies of this document are available at 15 cents each, postpaid. Orders should be sent on the coupon provided below to the American Veterinary Medical Association, 600 S. Michigan Ave., Chicago, Ill.

A limited number of USDA Publication No. 300, "The National Poultry Improvement Plan," (price 10 cents) are on hand and will be supplied, while they last, without extra charge with each order for "Poultry Information—Please."

Send ..... copies of "Poultry Information—Please," for which I enclose $..... [Stamps acceptable in amounts under $1.00.]

Name .....

Address .....
(Street)

.....
(Town) (State)

An' Related Topics

(*Continued from page xxviii*)

Our Question Box*

I

Question.—What is zoöhygiantics?
Answer.—Circuration.

II

Question.—What is phthisozotics?
Answer.—Occision or trucidation.

III

Question.—What is Cassandra?
Answer.—Chamaedaphne.

*No encore.

World's Milk Production*

According to the International Institute of Agriculture, the average annual production of cow's milk during the five-year period ending with 1938 was 510 to 530 billion pounds, of which the countries of Europe produced 58 per cent, and North America but 26 per cent, or 133 billion pounds. The highest producing countries were Germany, Holland, Denmark, Belgium and Switzerland. Asia, Oceana, South America and Africa are the next highest producers, in the order named. Computing into the total the milk of carabaos, goats and ewes, the annual production for the period named was somewhat less than 600 billion pounds.

Country	*Animal*	*Billion lb.*
Europe	cow	315
No. America	cow	134
Asia	cow	40
So. America	cow	20
Africa	cow	4
India & So. Asia	Carabao	33
Europe	goat	11
No. & So. America	goat	5
All countries	ewe	4
Total		566

Owing to the war, experts predict that production in Europe will be reduced for many years.

*The figures are taken from Hoard's Dairyman, Oct. 25, 1941.

Why worry about what will happen after the war is over. You may not be here.

Time Tested
Efficient
Safe

Lockhart canine distemper products were the first agents developed anywhere in the world for the control of this filterable virus disease. They have stood the test of more than sixteen years of use.

They have always been free from extraneous viruses which may be harmful or dangerous, not only to dogs, but to humans and (or) other animals.

The convenient and economical

HOSPITAL PACKAGE

is popular with veterinarians who use Homologous Serum in larger quantities.

Code Word:

Quart	250 cc bottle	$11.25

Less 10% trade and 2% cash discounts.

ASHE LOCKHART, INC.

"Producers of Better Biologicals for Graduate Veterinarians."

800 Woodswether Road **Kansas City, Missouri**

In Canada—Canada Representatives, Ltd. 193-195 Spadina Avenue, Toronto, Ontario

MEMBER Veterinary Exhibitors Ass'n

...r Complicated Milk Fever

when low blood serum Calcium may be complicated by low blood serum Magnesium and Ketosis—

USE JEN-SAL

D-C-M Solution

★

A stable solution each 500 c.c. containing 3½ ounces Dextrose, 3-7/10 ounces Calcium Boroglucanate, and 2/3 ounce Magnesium Boroglucanate, with traces of Phosphorus.

★

THE MOST PRACTICAL, COMPLETE AND ECONOMICAL CALCIUM PRODUCT ON THE MARKET

The clinical picture of the true Milk Fever case merges into that seen in cases of low serum Magnesium so that no clear-cut distinction is possible, but these cases which relapse may show a lowered serum Magnesium.

500 c.c. bottles—per dozen, $7.50; 3 dozen, $21.37; 6 dozen, $40.50; 12 dozen, $76.50
Discount 10 and 2%

ORDER FROM YOUR NEAREST JEN-SAL DEPOT

JENSEN-SALSBERY LABORATORIES, INC.

KANSAS CITY, MISSOURI

PRINTING PRODUCTS CORPORATION—CHICAGO